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REVIEWS

UNIVERSITY NOTES

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THE ACCOUNTING REVIEW

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DIFFERENTIAL COSTS

By C. RUFUS MOREM, *University of Chicago*

The determining factor in the establishment of any given business policy is a comparison of the additional income and the additional cost expected to result therefrom. If the former exceeds the latter, the action based on the policy is profitable to an enterprise, regardless of the costs which have been incurred previous to any single business decision. The foregoing principle applies to any given business decision, ranging from a produce dealer's problem of accepting an additional order for 100 pounds of butter at a given price, to a capitalist's problem of whether to build and operate an automobile factory. Between these extremes are such problems as whether: to introduce a new line; to solicit business in a new territory; to increase an advertising appropriation; to sue in the courts for collection of a past-due account; to cut prices in a distant territory; to sell similar goods under different trade marks; to scrap an operating machine.

The additional income and cost involved in any single business decision may be designated by the terms *differential* income and cost. This paper is concerned with the cost aspect of the problem primarily: first, because it is this aspect which is most frequently overlooked in the making of business decisions; second, because the idea of *differential costs*—in contrast to average costs—has not found expression in the technical literature of cost accounting. Differential costs may be defined as the costs which *must be* incurred if an additional unit of business activity is undertaken, and which *need not be* incurred if this additional unit of business activity is not undertaken. All other costs may be designated as *residual* costs, from the standpoint of that particular portion of output or group of operations, the differential cost of which is being calculated. For example the labor and materials required in filling a given order for one hundred dozen cloth caps would be part of the differential cost of

that particular factory order. They would be residual costs, from the point of view of an additional similar factory order.

Differential, as against residual costs, are not to be confused with direct, as against indirect, costs. The latter distinction has to do merely with the technique of apportioning total costs. Some costs are presumed to be directly traceable to particular cost-units; others are indirectly apportioned to them on the basis of some working rule. Differential costs of any given portion of output typically would include both direct and indirect costs, although direct costs would probably in most cases comprise a larger percentage of the total. If one estimates the differential cost of increasing total output during a given period of time, but using identical machinery and equipment, he must include not merely the raw materials and direct labor entering into the manufacture, but also the additional wear and tear, additional maintenance expenses, additional storage space for larger inventory, and other costs traceable to the additional output.*

The technical procedure most commonly advocated and followed in present day cost analysis attempts to arrive at the average cost of a group of articles or a series of operations. It assumes, for example, that a total cost of \$30,000 incurred in the manufacture of 14,000 similar articles should be apportioned equally among all the items. Each of the 14,000 items is declared to cost \$2.14 each, the "average" cost. Unless the total cost is to be apportioned among several different kinds or classes of items which are made concurrently, the determination of unit costs is purely a matter of simple division of total units of product or service into total cost.

But an analysis giving effect to differential costs does not concern itself with the allocation of total costs. It may be that, in the foregoing case, \$25,000 costs had been incurred by the time 10,000 articles were produced; it may be estimated that 2,000 more articles could be produced at a differential cost of \$3,000. The important consideration in a decision whether or not to make and sell 2,000 additional articles is the additional cost and income involved in the future business, not the previous cost and income involved in past business.

*The most complete discussion of the practical significance and application of differential costs appears in J. M. Clark's *Economics of Overhead Costs*.

From the standpoint of business decisions, differential cost is the only concept of cost which can properly enter into the establishment of a policy. It looks toward the future, without regard to the costs previously incurred through investment in permanent plant and equipment or irrevocable contracts to purchase materials or labor. Average costs may be important as a basis for comparing past operations with a given standard; but they have no necessary relation to the costs yet to be incurred, which are, of course, the ones most important in the making of any given business decision. All of the foregoing discussion may appear to involve obvious economic facts. It does. In fact the influence of differential costs is continually discussed in the writings of economists and is implicit in the actions of business men. But accountants have said little or nothing about it.

In a paper read before the National Association of Cost Accountants in 1921, C. B. Williams made the following statement: "Whenever you exchange commodities or services and as a result have more assets than you would have had if the exchange had not been made, you have realized a profit. This is not a problem in accounting, but in business."^{*}

But why is it not a problem in accounting? Accounting is useful to business mainly to the extent that it provides data which can be used in the formation of business judgments. Average costs (including frequently revised "standard costs") are important; they are very important. But even "standard" costs are primarily concerned with an average apportionment of costs already incurred; it is only the costs not yet incurred—the expected differential costs—which can affect a decision not yet made. If the purpose of cost-determination is—as is often asserted—to provide data for business decisions, one may well ask whether differential-cost determination should not be a "problem in accounting."

II

It was implied above that the unit for allocating differential costs is the business activity involved in any single business decision. This point will be illustrated by two simple business problems: (1) whether or not to increase production; (2) whether to close down a plant or to continue operation. Assume that a business man must decide whether to expand production, from 10,000 articles during a

^{*}Yearbook of the National Association of Cost Accountants, 1921, p. 201.

given period of time to 12,000, and again from 12,000 to 14,000. The following table indicates the total cost of manufacture and the differential costs of additional output for these amounts under conditions of decreasing costs.

Number of articles	Cost of manufacture		Differential cost of additional output	
	Total	Per article	Total	Per article
10,000	\$25,000	\$2.50	-----	-----
12,000	28,000	2.33	\$3,000	\$1.50
14,000	30,000	2.14	2,000	1.00

In the foregoing table average costs of manufacture decrease as output is increased from 10,000 to 12,000; also when increased from 12,000 to 14,000. But the differential cost of the added output is only \$1.50 per article for the first increase, and \$1.00 for the second. Such an enterprise, which increased its output from 10,000 units to 12,000, could—if the price of the previous 10,000 articles were unaffected—make a profit if it received any price higher than \$1.50 for each of the last 2,000. It could also profit if it sold an additional 2,000 at any price greater than \$1.00 per article. This is, of course, the principle underlying the practice of “dumping” manufacturers’ products in foreign countries or in distance domestic markets. It is also the principle recognized when a manufacturer markets identical commodities under different and presumably competing brands, or offers them to his customers with different kinds of service.*

One real problem to be faced when basing prices upon low differential costs is the possibility of “spoiling the market” for the price-cutting enterprise. The ultimate net income may be greater from selling a restricted output at a high price than from instituting a price-cutting policy. Nevertheless a business man must give up all consideration of past costs and consider only those of the future in making his decision. If he can improve his position (in the long run) by a given procedure, he is under an obligation to himself to

*In the foregoing illustration, if full competitive conditions prevailed (that is, if this producer’s increased output would not affect the general market price), the enterpriser would have no interest in cutting prices on any of his output, for he could dispose of it all at the prevailing market quotations.

adopt it, even though his expected gain may be less than he had originally hoped for at the time of embarking on the complete enterprise.

The foregoing table illustrated the case of a concern operating with decreasing costs, and showed that the differential cost of additional output decreases more rapidly than the average cost of the total output. The following table illustrates the case of an enterprise for which average costs increase as total output increases, and also for which differential cost of additional output increases more rapidly than the average cost.

Number of articles	Cost of manufacture		Differential cost of additional output	
	Total	Per article	Total	Per article
10,000	\$25,000	\$2.50
12,000	31,000	2.58	\$6,000	\$3.00
14,000	39,000	2.79	8,000	4.00

This situation is frequently encountered in business, and is particularly disastrous in its effects and difficult to detect during "boom" periods where costs are rising more rapidly than selling prices. It is not enough that selling price of additional product cover the average cost of those goods already produced; they must exceed the differential costs of those that *are to be* produced. In the present illustration, the differential cost is \$6,000 for the first 2,000 articles above 10,000; the differential cost is \$8,000 for the next 2,000 items.

Additional business cannot be accepted unless all the customers previously sold to are willing to purchase at a price which will exceed the differential costs involved. For otherwise it would be to the advantage of the producer merely to substitute one particularly desirable group of customers for another less desirable group. This assumes that each additional unit of business is independent of, and separable from, all others, and can be taken or refused at the will of the enterpriser.

III

Another important type of business decision—encountered particularly during periods of depression—is that of whether to operate a given manufacturing plant and equipment or to “close down.” Assume that a manufacturer owns a factory containing specialized equipment, and having a capacity for producing 100,000 items which have been selling at a price of \$1.25 each. He is now faced with a situation where market price has fallen to 75c each, and it appears that the price will not rise to its former level. The manufacturer believes that he can sell at least 80,000 items annually at the new price, if he chooses to do so. Should he make and sell this number? The answer depends upon the differential costs. Assume that the total costs of producing 100,000 items had been \$100,000, a cost which gave the enterpriser a profit of \$15,000. An analysis of the prospective operations indicates that \$45,000 of fixed charges (interest, insurance, property taxes, watchmen, executives, etc.) must be absorbed annually, whether the plant operates or not also that the differential costs (materials, direct labor, marketing, etc.) of producing the 80,000 items would be \$40,000. The following data show the net results of operating the plant as against allowing it to remain idle.

	Idle plant	Operating plant
Fixed charges	\$45,000	\$45,000
Differential costs	40,000
Total costs	45,000	85,000
Gross income.....		60,000
Net loss	45,000	25,000

The foregoing table illustrates a situation where it is more profitable to operate a plant at a moderate net loss (\$25,000) than to close down at a greater net loss (\$45,000). The previously incurred costs are, of course, facts—indisputable facts which may serve as the basis for making estimates in the future. But they have no casual relation to the policies of the future.* Only the additional costs of oper-

*Differential cost in this case, as in all cases, depends upon the alternative offered to the business man. The cost of producing the 80,000 units is one amount, if the alternative is to close down the plant. It may be quite another if the alternative is to lease the plant to a prosperous competitor.

ating (not the costs incurred whether he operates or not), affect the business man in his adjustment of output to a market price under competitive conditions.

IV

Whether or not differential costs can be given explicit recognition in the double-entry records is a matter which may well engage the attention of practical cost accountants. Dealing with differential costs is not easy or simple. Differential analysis of the costs of an enterprise requires carefully applied statistical and engineering technique. It involves a study of the costs of an enterprise when it is operating at different rates of output, and with different commodities or services being produced in different proportions. This sort of data does not lend itself to the technique of double-entry classification or to the present methods of apportioning costs as "direct" and "indirect." Nevertheless it is the basic information which underlies business planning and which must be considered in establishing a program of budgetary control.

The unit for calculating differential costs is any single business decision. The total cost of the output of a factory during the first ten years of its operations is identical with the differential cost of this output, if a factory is to be built; for either amount includes cost of erecting plant, purchasing equipment, procuring funds, training salesmen, procuring raw materials, direct and indirect labor, etc. A cost-accountant's schedule for apportioning cost to output is considered satisfactory if it absorbs total cost during the ten-year period, good and bad years combined. The original business decision involves the entire ten-year period. When it proves necessary to make a new decision before the ten-year period has expired, the basis for the new decision will be the differential costs of the future (not the cost already incurred) in relation to the expected income of the future.

Any concept of cost should take into consideration the long-run as well as short-run effects of a given business policy. It should look beyond the immediate decision to those which are to be made in the future. The additional costs of business of the future must recognize such factors as the curtailment of income by "spoiling the market," the difficulty of raising prices to an established clientele during later periods, and the expense of equipping and training a sales or manu-

facturing labor force. It is such considerations as these which have been implicit in the idea of "standard costs" and standard burden rates; but the issues have often been blurred by arguments to the effect that sales prices *must* exceed costs of production as shown by the accounts. It is possible that business may be worth taking which would not cover its cost, as reflected in the accounts.

V

The significance of differential cost is brought to the front most strongly in business decisions which involve "sunk" costs represented by permanent equipment, and during "slack" periods of business operations. The discussion of unabsorbed and overabsorbed burden which filled the programs of cost accounting associations a few years ago is evidence of a feeling that blind dependence upon average costs may cause mischief. Many speakers cited instances where firms had unwisely refused business because it would not cover the total "costs" of operation during a period of depression. Modern practice has developed techniques for dealing with "unabsorbed" and "overabsorbed" burden, in some cases deferring it to the cost-calculations of future periods, in others carrying it directly to "profit and loss." The very fact that such "costs" are omitted from the "cost accounts" of current output indicates a tendency to recognize the differential-cost principle in costing technique. To be sure, but few accountants have gone so far as to omit all "burden" from the cost-value of unsold merchandise; even the most liberal user of cost-accounting data would probably insist on including a "fair share" of the overhead costs in the current output of an enterprise. Probably as extreme a statement as has been given serious consideration by practitioners is one made by Mr. Williams, in the article cited previously when he said: "I contend that it costs no more to manufacture an article when only one out of ten machines is working than it does when all are working." Mr. Williams was, of course, concerned with the problem of accounting for "unearned" burden, when estimated on the basis of a normal or standard rate. He was objecting to the idea of making current production absorb total burden, when output was below the "standard." He would not go so far as to ignore all previously incurred overhead costs, but would insist on each period bearing merely its fair share of the burden, based upon the percentage of capacity to which equipment is utilized.

VI

Cost accounting has made great strides recently in extending the scope of the cost-unit concept. Practical men are now concerned with allocating cost to any given unit of business activity, and writers are urging the development of technique for the allocation of direct and indirect costs to these units. The cost-unit may be a specific transaction (such as the shipment of one hundred bales of cotton), a subdivision of the administrative organization (such as the assembly department of an automobile factory), or a commodity (a motor car, a ton of steel, a gross of pencils). The present literature on "cost accounting for distribution" indicates a tendency to extend and re-evaluate cost concepts and procedures. Average costs are equal for each member in a series of operations, and are exemplified in the development of standard-cost systems. They are going-concern concepts, which serve best when all business operations occur in the manner and under the conditions anticipated. They are intended to be used as a check against the correctness of a previous business decision. But when a new business decision is being made, only differential costs (conceived in the broadest sense) should be considered.

AN ACCOUNTING PARADOX

By HENRY R. HATFIELD, *University of California*

He who thinks that to write off an equal amount each year is the accurate method of amortizing premium (or discount) on bonds should read no farther. This article is not for him.

The paradox to which attention is called is as follows: If one purchases at par \$2,000,000 bonds bearing 5 per cent interest (payable semi-annually)* he will receive \$50,000 each half year as interest, and at the maturity of the bonds will be repaid his investment of \$2,000,000. In this case the amount collected each six months, by cashing the coupons, is the exact amount of interest earned for that period. No adjustment need be made and the amount of cash received each half year may, with propriety and accuracy, be credited to Interest Revenue.

But, if the investor buys \$1,000,000 5 per cent bonds at 110 and another block of \$1,000,000 5 per cent bonds at 90, the case is different. To be sure, on the face the situation seems identical with that where \$2,000,000 bonds are bought at par. In each case there is an initial outlay of \$2,000,000; the same sum is collected each time coupons are cashed (that is \$50,000 each six months); the repayment of principal is made at the same date in each case and in exactly the same amount. Investment, collections of coupons, and payment of the face of the bonds are identical in time and amount. How can there be any difference?

The paradox is this: Where the bonds are bought at par the interest earned each six months exactly corresponds with the amount collected by cashing coupons. But in the second case, that is, where half of the bonds are bought at 110 and half at 90, the cash received at the end of the first six months is not all interest earned; the \$2,000,000 invested is not earning just $2\frac{1}{2}$ per cent each semester, an adjustment of premium and discount is necessary if the accounts are to be entirely accurate.

*The ordinary custom of the street is here followed in speaking of a bond paying $2\frac{1}{2}$ per cent each half year as a 5 per cent bond (interest payable semi-annually). And in all further references to the rate paid by bonds it will be assumed that the rate is paid in semi-annual installments, without taking space each time to specify that condition.

This may be made clear by taking an extremely simple illustration in which the bonds bought mature in one year. As only two interest periods are involved verification of the figures can easily be made by a simple arithmetical calculation. Bond tables show that a one year 5 per cent bond bought at a premium of .97078 per cent yields 4 per cent. A more close calculation shows that the interest yield is more accurately expressed as 4.00000042 per cent. A similar calculation shows that a one year bond bought at a discount of .97078 per cent yields 6.0147892 per cent. These figures are accurate to less than one cent on a purchase of \$10,000,000 bonds bought at the premium named, and to about one and one-half cents on a similar amount of bonds bought at a discount.

Accepting these figures, which the curious can easily verify, the showing is as follows: The discount bonds earn during the first half year \$29,781.99 of which only \$25,000 is paid by coupons. The bonds bought at a premium earn \$20,194.16 which is more than covered by the coupons collected. Adjustments need to be made in each case, in accordance with well recognized procedure. But the adjustments do not cancel one the other, for the discount bonds need to be written up \$4,781.99, while premium should be written off \$4,805.84. A summing up of the situation is as follows:

Interest on \$2,000,000 Bonds

Period	Earned			Paid by coupons	
	On discount bonds	On premium bonds	Total	Amount	Excess or deficit
1st half-year.....	\$29,781.99	\$20,194.16	\$ 49,976.15	\$ 50,000.00	23.85+
2nd half-year	29,925.81	20,098.04	50,023.85	50,000.00	23.85—
Total	\$59,707.80	\$40,292.20	\$100,000.00	\$100,000.00	0

This shows that in the case given the cash collected at the end of the first half year exceeds the amount of interest earned by \$23.85 and that consequently the investment should appear on the books not at the original \$2,000,000 but at \$1,999,976.15. In the second half-year the interest earned exceeds the amount collected by coupons, but this deficiency is made up by an appreciation of the investment from its value at the beginning of the second half-year

to the full \$2,000,000. The adjustment properly to be made is relatively slight, presumably negligible. But when it is remembered that Sprague's tables profess to give values accurate to one cent on \$1,000,000 we see that we have here an error, if no adjustment is made, 1,100 times as great as that allowed by Sprague.

An apology is perhaps due to the readers of the REVIEW for merely giving an arithmetical illustration of a particular case instead of a general algebraic formula universally applicable. The formula, using the standard actuarial symbols, (for which I thank my learned colleague Professor A. H. Mowbray) is as follows:

$$* \text{Net adjustment} = (i-j)(i a_{\overline{n}|j} v_j^n - j a_{\overline{n}|i} v_i^n) / (i a_{\overline{n}|j} + j a_{\overline{n}|i})$$

*Where j is the semi-annual effective rate on bonds sold at a discount
 i is the semi-annual effective rate on bonds sold at a premium
 and n is the number of semi-annual periods.

In the above discussion the paradoxical result is shown that two investments apparently identical do not yield in the several interest periods the same amount of earned interest. This is due to the fact that discount and premium, even though identical in amount and on identical bonds do not mutually cancel. In the illustration a very short time bond was used for the sake of simplicity. With longer maturities the variations would be greater, but they would be less marked where the difference in the net yield of the discount and premium bonds (which in the illustration is approximately the difference between six and four per cent) is smaller.

To say that unless an adjustment is made, in such a case, the accounts are incorrect, is not to say that such an adjustment is obligatory. In all fields one accepts approximations well knowing that they are inaccurate and to do otherwise would be both pedantic and uneconomical. To make adjustments when the error involved is not of sufficient importance to justify the labor of making the correction would be foolish. But it is only proper to learn just where inaccuracies occur, and to estimate whether they may profitably be ignored. And the exhibit made above may be, at least, of some curious interest, to those concerned in the principles of accounting, and not merely in its technic.

UNIVERSITY INSTRUCTION IN INDUSTRIAL COST ACCOUNTING

By PAUL M. ATKINS, Ames, Emerich & Co.

At the present time it is becoming more generally recognized than formerly that a business concern is made up of a series of interlocking activities or functions. To a considerable extent the administration of a business means the adequate and thorough control of the major functions. To facilitate this administration, various devices are set up, the purpose of which is to supply information to the executive or to aid him in putting into effect the policies which have been adopted. One of the means of control which has been receiving an increasing degree of attention in recent years is factory cost accounting. Hence one of the tasks which has confronted university schools of business is that of teaching their students something of the nature, operation and use of the system of records and accounts by means of which information concerning factory costs may be obtained. While a system of cost accounts and records may serve various ends, in most instances its primary reason for being is that it provides a very valuable means of control for the assistance of the general manager, his associates and assistants.

For the purposes of the following discussion, industrial cost accounting may be defined as a record in terms of dollars and cents of what goes on in a factory. This definition excludes production records in terms of physical units, although the cost accounts in most cases derive a large part of their information from that source, and, for certain control purposes such records in pounds, feet, hours, etc., are more useful (for purpose of business administration) than are the cost accounts as they have been defined. On the other hand cost accounts are differentiated from the general or financial accounts in that the general accounts usually record transactions up to the time when the factory is reached, and begin again when the work of the shops has been accomplished. The cost records, like the general accounts are kept in financial terms but they are set off from them in that they deal with transactions within the factory and so fill the gap in the general accounts which would otherwise exist.

The reasons for this separation are largely practical in their nature though there is a sound theoretical basis for them also. The production control records are fundamentally "forward looking" records by means of which work is planned and scheduled. Only such records of work actually accomplished need be kept as a part of the production control system as are required for a basis for immediate further plans and schedules. In actual practice the extent of the record of what has been done is broader than this for data are needed as a basis for cost computations. Hence a different point of view is necessary for the administration of a system of production control than for the management of the cost records which are largely records of what has already been accomplished. Of course, all cost records should be prepared with the idea that they will serve in the future guidance and administration of the business, but this does not contradict the fact that they are largely records of the past, except in so far as they are estimates of the future in terms of cost. In short, while all functions of the business should be carried on with the future of the concern in mind, some like the production control records, are primarily concerned with the future and involve a forward looking approach to their operation, others, like the cost records, are fundamentally historical. Since all records in a business should form parts of a coordinated whole and as the production control and factory cost records are very closely related, the division between them is not so marked as between others which are more widely separated, but it is sufficiently distinct to make desirable their separation from the point of view of instruction and, in many cases in actual business, from the standpoint of their current administration.

On the other hand it is also desirable, in many cases, to separate the cost accounts from the general accounts. This is very obviously necessary when the general accounts are kept at some main office at some distance from the plant in a different town, for example. Even though the entire business is located in one place it is frequently well to separate them. The fundamental reason for this is that the knowledge needed for the adequate administration of the cost records differs from that required for the supervision of the general accounts. It is essential for the cost accountant to be thoroughly familiar with the operation of the shop, the methods employed and the equipment there used. To a considerable extent he needs

the same kind of training as a factory executive. Of course, he also needs to be familiar with the basic technique of accounting, but the acquisition of a knowledge of accounting technique is usually much easier to acquire than is an acquaintance with shop operations. It is desirable also to have the physical contiguity of the cost department and the planning department rather close in order to facilitate the transfer of the large number of individual vouchers. This means, in many cases, that it is necessary to locate the cost and general accounting departments in separate parts of the building. From the point of view of instruction it is convenient, also, to separate cost records from the general accounting records in order to restrict the scope of a course within workable limits. Hence it is well in the majority of cases to make this division between the general and cost accounts.

Two things should be apparent from the foregoing discussion: (1) the cost accounts and records form an integral part of the system of records and derived reports by means of which information is supplied to executives for the control of the business, and (2) the cost records form a connecting link between the general accounts and the production control records of the factory by means of which the operations in the several shops are controlled.

Industrial cost accounting, therefore, is one of the control functions of a manufacturing concern and as such deserves a place in a university or collegiate school of business administration. The location of a course in this subject in the curriculum is a moot question. Because of the similarity of its technique in certain respects to that of general accounting, there are good reasons for grouping it, for instruction purposes, with courses in that subject. On the other hand, because it is a record of factory operations and, in many respects, is a projection or extension of the production control records, it may equally appropriately be grouped with a course in factory administration. As it is ordinarily more difficult to familiarize a student with the nature and essence of a transaction than it is to teach the technique of a method for recording it, it is usually well, from a purely practical point of view, to make the connection with the course in factory administration the more intimate of the two, and so group courses in industrial cost accounting with the courses in factory management and control.

The major problems which must be solved if instruction in cost accounting is to be successful have already been suggested. They are, of course, the opening up to the student of the kinds of uses to which industrial cost records may be put, and training in the technique of cost accounting so that the information which is needed may be made available quickly and in a form adapted to the use to which it is to be put.

Only a beginning can be made to the solution of the first problem. Possible uses and the reasons for their importance can be suggested to students, but the real significance of the uses of industrial cost records implies a greater familiarity with the nature and problems of business administration as a whole than most students possess or can be expected to possess, and also a range of practical experience which can only be obtained through several years of work in the business world. Of course, a start should be made toward a solution of this problem, a start which will render the student receptive to later experience through which he will work out his own answer to the question.

The second problem, that of giving the student a reasonably thorough knowledge of cost accounting technique is more susceptible to treatment in a course of instruction, though it should be realized that it, too, cannot be fully solved in the class-room, but that academic instruction, even under the most favorable circumstances, must be supplemented by practical experience.

In addition to these two major problems to be solved in planning and conducting a course in industrial cost accounting, there are several others which demand consideration and which must be outlined before methods of instructions can be discussed.

One of the first of these which is likely to be encountered is the reconciliation of the different points of view which may be assumed in regard to the whole subject. There are various standpoints which may be taken but only three which are met most frequently need be mentioned here. In the first place, there is that of the general accountant, whose approach to cost accounting has been from his experience with and study of the general or financial accounts. His attitude, typically, is that the cost records should furnish a means for tracing the distribution of expenditures which have been incurred for the benefit of the factory. As long as all charges are distributed, and the general ledger and subsidiary ledgers balance, the accountant

is generally satisfied. He usually knows little and cares less about the operations which take place in the factory and which are the real basis for records which he makes. He emphasizes the orderly and systematic set of accounts which are so necessary to a satisfactory system of cost records, and under his influence the various accounts are caused to interlock to form a comprehensive set of books. This approach to and attitude toward cost accounting is quite necessary and desirable up to a certain point, but it is not by any means the only one to be taken.

At the other extreme is found the typical factory executive who wants to obtain from the cost records information which will aid him in the administration of the departments under his supervision. He is interested in unit costs, process costs, value of "in-process" inventories, departmental expenses, etc., and is not at all concerned with the formal records of the accountant. Brief reports and memoranda of essential facts are the kinds of things he is looking for. Whether the records are complete or interlock with the general accounts or balance at the end of any accounting period are matters of little import to him, as long as he feels reasonably sure of the accuracy of the figures which are given him. This approach also has points of merit, for it makes for the close relationship between the production control records and the cost records which is so essential to the complete and full utilization of both.

There is still a third way in which the cost records may be considered,—from the standpoint of the general manager. This attitude toward cost accounting should be broader than either of the other two, and in many cases is so. Fundamentally, it regards the information to be derived from the cost records as data to be used in the administration of the business as a whole and as a means of checking up on the efficiency of its various subdivisions and their respective heads. He is concerned largely with the results of the cost records rather than with the records themselves, but at the same time the intelligent general manager recognizes the fact that it is necessary to have a well coordinated system of accounts of which the cost records form an important part.

One of the problems, then, of instruction in industrial cost accounting, is to coordinate these different approaches to the subject, emphasize the characteristics of each which are of the greatest importance in the development and use of cost records and give to the student

the conception that they are not contradictory but rather that they are mutually supplementary. To do so successfully necessitates an understanding and appreciation of all three of these points of view on the part of the instructor.

In addition to the problems which center around the different points of view which may be taken in regard to industrial cost accounting, are those which are raised by the heterogeneity of the kind of students who wish to study this subject and the variety of their previous training, the possible kinds of work for which such a course may be a direct and immediate means of training, and the different types of schools in which instruction in this subject is given. The types of students and their training, the positions for which they are preparing themselves and the schools in which the instruction in industrial cost accounting is given are problems which are closely interlocked and need to be considered together.

The kinds of students who desire to take courses in this field range all the way from the hard working and ambitious youth who has forced his way up from very meagre beginnings by sheer grit and dogged perseverance to the son of the wealthy capitalist. To the first, it is frequently a matter of immediate importance to obtain some little knowledge of the subject to enable him to secure a better position, perhaps simply a better clerical position. The son of the capitalist, on the other hand, may have particular interest in the course which he is taking simply as one step in the preparation which he needs to enable him to undertake the management of his inherited wealth. In between these extremes is the great mass of students whose needs are not so pressing as those of the first man described and whose opportunities are not so broad as those of the second.

The types of previous training of the students are as varied as are their personal circumstances. They come with little more than a partial high school education in some instances and through all stages of preparation to the other extreme where they have already obtained their first degree from some university of high standing where their instruction has been excellent in quality and of a nature to fit them for the study of a course in industrial cost accounting. It should not be overlooked that the previous experience of students

as well as their formal training has an important influence over the adequacy of their preparation, for the study of the subject under consideration.

Just as there is an almost infinite variety of kinds of students who wish to study industrial cost accounting, so there are also many different sorts of work for which a knowledge of this subject is a partial preparation. In the first place there is the opportunity for the student to become a professional or resident cost accountant. Such a position involves the establishing of a satisfactory system of cost accounting in the first place, and, in the case of the resident cost accountant, in the second place, the operation of the system after it is set up and running. Such a position demands, on the one hand, a thorough knowledge of the technique of industrial cost accounting and of its various connections with the system of production control and the general accounts, and, on the other hand, an acquaintance with the needs of the company executives and the kind of information which they need.

A second class, closely related in certain respects to the foregoing, is made up of professional and resident industrial engineers. In this case a knowledge of industrial cost accounting is desirable, first, to enable the industrial engineer to plan his system of production control in such a way as to provide the cost department with all the data which it needs, both accurately and promptly, and, secondly, because it enables him to derive the maximum amount of information from the cost records as a means of evaluating the production control system which he has installed and of improving its essential details.

The professional or resident accountant is interested in having a relatively thorough knowledge of cost accounting because it will indicate the kinds of information which he can reasonably expect to obtain from the cost records. Moreover it is rather necessary for him to have a clear conception of all of the various accounts, and their relation to each other if he is to be able to lay out a satisfactory system of accounts as a whole. If he is also an auditor, it is essential for him to have a sufficient knowledge of cost accounting to enable him to audit successfully the books of a company which has a cost system.

In recent years not a little attention has been given to the use of statistics as a means of presenting information to executives and

others who may be interested in the affairs of the company. The scope of the function of the resident or professional statistician and his relation to accounting has not been as yet very clearly defined. It should be noted, however, that not a little of the data which is presented in statistical form is computed from the cost records of the company in question. It is highly desirable, therefore, for the industrial statistician to have a rather thorough knowledge of cost accounts and the way in which they are prepared.

All of the positions which have so far been described have primarily an interest in the technique of industrial cost accounting rather than in the actual facts which may be shown in the cost records. To develop adequate methods of cost accounting for any concern it is essential to have a fairly good idea of the ultimate uses to which the records are to be put. It may be fairly said, nevertheless, that the professional accountant, statistician or industrial engineer is more interested in methods and their underlying theories than he is in tangible results of the operation of these methods.

The general manager is probably the one who has occasion to make the most extensive use of the information provided by the cost records. He needs training in the meaning and significance of the various records which can be prepared for his use. He is also interested in the smooth functioning of all of the departments of his business and hence needs knowledge of the relationship of the cost department to the others.

Next to the general manager, the factory manager and his immediate associates and assistants—the production manager, superintendent, plant engineer, production engineer, etc.—are the ones who are the most likely to be interested in the results of the cost records as they furnish one of the best ways for checking up and evaluating the work under their control. In general they use such data less for policy determination than as an aid in policy administration. To obtain the maximum benefit from the cost records, these managers need some training, at least, in the technique of cost accounting.

There are also other company executives who are sometimes interested in cost accounting. The sales manager, for example, though his problems may seem to lie in an entirely different direction than industrial cost accounting, can often obtain much information from these records which is invaluable in making decisions in regard to price policies and individual prices. The treasurer, who is primarily

concerned with the finances of the business, can obtain many figures from the cost records which are very helpful in forecasting the financial needs of the business. Others, like the chief engineer and the purchasing agent, may also fall in this class, but the cases cited are sufficient as illustrations.

Not only are future executives and department managers interested in industrial cost accounting, but also others who can hardly hope to aspire to such positions. Many clerks see a chance to better themselves by acquiring a knowledge of industrial cost accounting.

In addition to those who expect to follow active business careers there are at least two other classes of men who desire to have a knowledge of this field. One of these is made up of those who expect to teach business subjects of one kind or another. Of course, it is patent that those who expect to teach this subject must have taken a thorough course therein. All those who are preparing to teach either general accounting or factory management should also study it, and in many cases teachers in other business fields find such a course helpful. The other class referred to is composed of economists and others who wish to study business objectively. As a tool to aid them in the analysis of a business, industrial cost accounting is often very useful.

With all the varying types of students with a multitude of different kinds of preparation and background and with many possible lines of work for which they are preparing and for which a knowledge of industrial cost accounting is desirable, it is not surprising that several different sorts of schools have developed or are developing courses of instruction in industrial cost accounting. There are schools of business administration of collegiate grade, both day and evening, which grant recognized bachelor's degrees at the end of the prescribed course of study; there are graduate schools of business administration which require a bachelor's degree for entrance; there are schools of engineering—most of them of undergraduate grade—which give work on this subject; there are academic undergraduate institutions; there are schools of accounting, usually privately owned, giving work in residence; there are correspondence schools and commercial and technical high schools which also attempt to give instruction in this field. The needs and problems of these schools are

varied and the means to be employed in dealing with them must necessarily be adapted to the conditions with which they are confronted.

The undergraduate school of business administration having day-time classes draws for its student body largely from those who come of families whose economic position permits them to support their sons wholly or in large measure while attending such a school. Their preparation and background is likely to be very similar to that of the normal student in the corresponding academic college, but they have usually rather definitely, though sometimes only tentatively, decided upon a business career. They customarily have only a slight business background and are not very familiar with the significance and possibilities of the various business positions. The schools themselves are tending to take a rather broad viewpoint of business administration, and insofar as a course in industrial cost accounting is concerned, are inclined to make the approach described previously as that of the general manager. Such schools endeavor to train the student—bearing in mind that this academic training must be supplemented by a practical apprenticeship in one form or another—for such positions as those described under the heads of professional and resident cost or general accountant, industrial statistician, general manager, departmental managers, etc. In short, the students in such schools are looking forward to executive positions of one kind or another, or to owning and operating businesses of their own.

An analysis of the other methods of instruction in these institutions, based on a questionnaire and a study of their program of study, indicates that these schools use in general what may be called the orthodox method of instruction—textbooks and class discussions—supplemented by the keeping of practice sets of accounts and the solution of brief assigned problems such as now frequently given in C.P.A. examinations. Lectures are used only infrequently and in immediate conjunction, in most instances, with the class discussions. In only a very few instances is the attempt made to have the students investigate particular concerns, and, in the few cases noted, the investigation was of a general character and in none was the student expected to offer constructive criticisms of the methods observed. The tendency seems to be to teach the course both from the accounting and executive viewpoint.

The evening schools of business administration of collegiate grade have, as a rule, a different class of students from the day class school. Most of those who take courses in the collegiate evening school of business are men who are actually employed in business at the time when they are studying. They have learned in one way or another that they need more thorough and more advanced instruction than they have previously received. In some cases they desire simply specific training in some particular subject in which they are especially interested or which has become a stumbling block to their advancement. Very often they do not try to complete a full program of study and hence the "academic mortality" in this type of school is usually heavy. There are some students, however, who have acquired a longer range of view and who wish to get at the underlying principles on which business is based. These students are likely to be the more intelligent and ambitious and to finish an entire course of study. The students in this type of school ordinarily have a much keener appreciation of what actual business is like and the form in which its problems appear than do the students in the day school. They do not have the same amount of time available for study as do the day students and because of their intimate contact with business details they are less likely to find it easy to take a broad point of view of business and the necessary training for its successful pursuit. To a considerable extent, however, they eventually reach about the same kinds of positions as do the graduates of the day schools.

An analysis of the methods employed by evening schools of commerce and business administration indicates that textbooks are used substantially as in the day schools of business. Practice sets and practical problems are used more extensively; lectures by the instructor find a much larger place, in some cases reducing class discussion to a minimum. In most cases, however, class discussions seem to be utilized. Investigations and reports are not used at all because of the obvious difficulty of students who are employed during the day time—as most evening school students are—having the time or the opportunity of doing much work. More emphasis seems to be laid on the accounting than on the executive viewpoint in teaching these courses.

Closely related to the two classes of schools just described are the graduate schools of business administration. Such schools draw, as

a rule, students who have a much "broader" training than those in the other types of schools already discussed. This is evidenced by the bachelor's degree which they must hold as a prerequisite. They are also likely to be mature and to be possessed of a broader and more far-sighted view of business and its problems than the other two groups of students. Because of ability or inherited position they are also more likely to reach the higher places in business than are the graduates of the other schools. They represent the elite of the business student world. In this class also are found those men who are definitely looking forward to teaching business subjects.

At the present time, only two schools of business administration have been found which claim to give instruction only to graduate students. One of these is conspicuously the example thought of when this type of institution is considered. This school employs textbook, problems, class discussion, collateral readings and occasional lectures as do the other types of schools discussed. In addition, this school has developed the "case" method of instruction, similar to that now employed by the better classes of law schools. The fundamental idea back of this method is excellent but its application is limited by the inadequacy of the existing material. This school also stresses in the second part of its course the investigation of a particular concern and a report thereon. Certain other schools which give instruction to graduate as well as undergraduate students seem to be tending toward the use of the same methods as those just described. Emphasis is laid on the executive viewpoint.

All of these different kinds of schools have this in common: they are looking at business in general and cost accounting in particular with a wider and more inclusive view than are the other types of schools discussed in the following paragraphs. More and more emphasis is being laid on fundamentals and the attempt is being made to show the underlying similarity of problems within a certain class for various sorts of industries, although it must not be forgotten, on the other hand, that the evening schools are still compelled to give many specialized courses to meet the demands of particular groups of students.

Undergraduate schools of engineering are another group of institutions which are beginning to devote some attention to the study of industrial cost accounting. The students are of pretty much the same type as those who enter the collegiate day schools of business

except that they have a technical rather than a commercial turn of mind. They have discovered, however, that a large proportion of their graduates are not becoming engineers but are entering on business careers of one kind or another. Many of them are becoming industrial engineers, cost accountants, factory executives, general managers and even sales managers through the development of what is being called "sales engineering." All of these positions demand some little knowledge of cost accounting as well as other phases of business administration. Recent years have seen curricula in what has been termed "industrial engineering," "administrative engineering," "engineering administration," etc., established to meet this need, and in most of these a course in cost accounting has logically and properly found a place. There is a tendency in some of these schools to make such a course more a matter of training in estimating rather than in real cost accounting, and in many there is undue emphasis laid on the factory executive's viewpoint of the matter as contrasted with that of the general manager or accountant.

While the background for the work in the schools of business administration has been largely in the field of economics, that of the engineering schools has been the training in technical subjects. The student in such a school brings to his study of cost accounting a relatively satisfactory knowledge of factory operations and the design of the machines on which these operations are performed. In this sense they are very well prepared for the study of industrial cost accounting. In this respect they are in the opposite position from that of the students in the schools of business administration who are usually uninformed of what goes on inside of a factory. On the other hand, engineering students are weak in their knowledge of records in general and of accounting methods in particular. In addition, they seldom have an adequate conception of the various functions outside of the factory departments and of their relation to manufacturing activities.

The approach to instruction in cost accounting utilized by schools of engineering which give courses in cost accounting seem to differ rather widely. In at least one school the standard methods and the accounting viewpoint are found. In other schools the course is taught as a part of a course in industrial engineering or industrial management, while in another it was found combined with work in heating and ventilation to form a single course, and in a third institution it

was a part of a course called "costs, wages and management." In two universities having schools of engineering and a school of commerce and courses in business administration, respectively, a separate section of the course in cost accounting was reserved for engineers in the first instance and a separate and distinct course was given in the two departments in the second. Insofar as the methods of instruction are concerned, the normal procedure of textbooks, problems and class discussion is commonly found.

While discussing schools of collegiate grade which are interested in cost accounting, academic institutions or colleges forming a part of a university should not be overlooked. Some of these are seeking to introduce courses in cost accounting, frequently in the economics department. Usually one or the other of two reasons impels them to add such courses. In many cases, they are simply trying to develop a department which will later grow into a school of business administration. In some instances, however, they are endeavoring to equip their students with a tool which will enable them to carry on better their studies in economics. The courses in the academic departments seem to be taught pretty generally by means of textbooks and class discussions with the occasional use of problems and practice sets. They do not appear to take up to any extent the more technical phases of cost accounting. The students in these colleges are of about the same type as those entering the collegiate day schools of business administration, though they are apt to have even less of an adequate conception of what business really is. Insofar as a course in industrial cost accounting is concerned, they are likely to use it if they attain such positions as that of statistician or teacher of economics. The view of this subject in such a school is usually broad; so broad, in fact, that it is frequently vaguely due to the inadequate training of the teacher himself in this field.

There have grown up in many of our cities private schools of accountancy which give some attention to the subject of industrial cost accounting. These schools are, as a rule, highly utilitarian and aim to put their students into possession of information which they can use to better their position immediately. Such schools are largely devoted to the preparation of students for the C.P.A. examinations and the study of cost accounting is, therefore, usually a side issue. Their students, for the most part, do not have more than a high school education; they are usually employed during the day and

hence are taking these courses at night; they are not interested in fundamentals, the immediate applicability of which they cannot see, and they are eager to learn all the "tricks of the trade" as contrasted with the underlying principles. They are of distinctly lower calibre, as a class, than are the classes of students previously discussed. The point of view which is usually taken in these schools is that which has been described as the "accountant's" and little attention is given to the broader aspects of the problem of cost accounting or to the uses to which cost records can be put. The students usually become high grade clerks and bookkeepers, resident, cost and general accountants, and occasionally rise to the professional plane of work. The distinguishing feature of courses in cost accounting in these schools is the emphasis which is placed on the working out of practice sets and of practical problems. If the student can handle this type of work, they do not care so much if he is not thoroughly grounded in the underlying principles. Like the evening schools of collegiate grade, they utilize lectures to the more or less greater exclusion of class discussions.

Another group of schools, usually privately owned, and in many respects like the class just described, though the method of instruction is different, is that composed of the correspondence study schools. In some few instances their work is of really high grade, but in most cases it is distinctly mediocre and not infrequently decidedly poor in quality. The type of student, point of view of the instruction and the kind of position which the student usually secures is pretty much the same as in the case of the private school of accounting.

One other class of school needs mention in this connection, more because of possible future development rather than on account of anything which it has so far accomplished in instruction in industrial cost accounting. There are many commercial high schools growing up at the present time in which courses in accounting are being given. It is problematical whether training in industrial cost accounting should be attempted in such schools because of the immaturity of the students and an almost total lack of background against which instruction in this subject can be focused. There is a possibility that efforts will be made in this direction in the future. Most of the graduates of such schools attain only minor executive positions in industry.

With these preliminary analyses of the types of students, kinds of positions for which a knowledge of industrial cost accounting is desirable and the varieties of schools giving instruction in this field in mind, it is possible to give consideration to the necessary prerequisites in the way of training which should be possessed by any student who expects to undertake a serious study of this subject.

As industrial cost accounting has been roughly defined as a record of what goes on in the factory in terms of dollars and cents, it is evident that it is essential for the student of this subject to have a fairly clear idea of factory processes and methods for their control. One way of gaining this knowledge is by practical experience in some factory, and it is highly desirable for the student to have worked for at least one summer in some shop. While such experience gives a familiarity with factory operations and a sense of the reality of what goes on in a shop which can seldom be gained from a mere study of books, nevertheless it is usually fragmentary and lacking in perspective.

To accompany such experience, therefore, it is highly desirable for the student to take courses which will give him an idea of the more outstanding and important manufacturing operations, such as iron and steel production, the remanufacture of metals, textiles, etc., and of the kind of equipment used in carrying on such operations. One of the most important problems in cost accounting is that of overhead costs, and these costs are largely the result, directly or indirectly, of the use of machines. The whole question of the preparation of machine and burden rates depends on a thorough knowledge of the construction and operation of the machinery employed.

A knowledge of equipment and its uses is only a part of the factory training needed by the prospective student of industrial cost accounting. It is also essential for him to have an understanding of the way in which the work in the factory is administered and controlled. In the first place, by far the larger number of vouchers which the cost department must handle comes from the planning department in which the administration of the factory is centered. A lack of knowledge of how these vouchers are prepared and what uses are made of them before they reach the cost department seriously hampers the work of the cost accountant in two ways. He does not know to what extent information which he wishes may be obtained from the factory control records, nor is he in a position to

check or verify the data which come to him, a task the performance of which is of the utmost importance to the successful operation of the cost department and which furnishes one of the ways in which the cost department may render service to the administration of the factory. A course in which the setting of manufacturing standards and the planning, scheduling and dispatching of production in all its various branches is discussed in one of the most important prerequisites to a course in industrial cost accounting.

This is hardly the place to carry very far consideration of prerequisites in the way of courses, but it seems desirable to mention them in that connection. A knowledge of equipment and processes is necessary before a study of factory administration can be adequately carried on, a knowledge of the underlying science of physics and chemistry, especially mechanics, electricity, heat and metallurgy is essential to a study of equipment and processes. Such subjects should be covered before the student undertakes the courses just described.

If a knowledge of the factory and its operation is one of the basic prerequisites to a course in industrial cost accounting, an acquaintance with general accounting and its technique is the second. Many of the cost records are kept in the form of accounts and to prepare and operate records in this form adequately a thorough knowledge of accounting technique is essential. As the cost records are also an integral part of the accounting system it is necessary also for the cost accountant to have familiarity with the content of the general accounts and be able to tie in his cost accounts with them. Courses in accounting which cover bookkeeping and the general principles of accounting are essential prerequisites to a course in industrial cost accounting.

So much for the courses in fields upon which industrial cost accounting is directly and immediately dependent. It must be realized, however, that any business is made up of more or less well co-ordinated groups of functions or activities and that it is impossible to change one of these functions without directly or indirectly affecting some or all of the others to a greater or less extent. Because the cost records reach out and touch many of the functions of the business and because they should also serve these functions, it is

highly desirable for the cost accountant to have some familiarity at least with the problems of marketing, finance, personnel, etc., and the ways in which these problems are handled.

As all of the courses dealing with these functions as well as with those of factory administration and general accounting are based on a knowledge of the general problems of business administration, and also because it is extremely desirable to survey the whole in order to facilitate an understanding of the parts, a course in business administration in which the interrelationships existing among the various functions should be brought out among other things should be a prerequisite to any of the other courses which have been described.

A course in industrial cost accounting, therefore, is based on a number of other courses which provide a knowledge of subject matter and technique which is desirable as a basis for the study of this field. It should also be treated as an integral part of a definite scheme of instruction and as such should be co-ordinated with other courses which are, to a certain extent, dependent upon it for their success. The whole is more important than any of its parts and the adequate instruction of the students is more than any individual course in the curriculum. A course in industrial cost accounting, therefore, should be arranged on the basis of its forming an integral part of a carefully laid plan of instruction and should be preceded by courses which will adequately prepare a student to obtain the maximum benefit from it.

There are several different approaches to the construction of a course in industrial cost accounting. One of these is that frequently taken by instructors in accounting—that a course in cost accounting is merely an extension of the general accounts. A course prepared with such an attitude on the part of the instructor is usually very detailed in respect to the bookkeeping entries necessary and lays stress on a system of checks and balances. It seldom gets at the real heart of the problem—the operations in the factory which give rise to the various entries—and while it often makes the students very skillful in the rapid entry of cost items it seldom gives them any training in handling any transactions which lie outside of the beaten track along which they have been guided. It is the kind of course which is frequently of the most immediate benefit to the student insofar as his salary is concerned, but it almost never fits him to do

constructive work in the development of adequate systems of cost accounts nor does it prepare him to use cost records as a means for executive control.

On the other hand the engineering schools tend to give courses in cost accounting which often take up a very careful analysis of the detailed costs of product or process and frequently discuss very fully the costs incident to the use of machinery. All too often, however, they stop there and fail to develop the cost records as an integral part of the system of recording of a business as a whole. In some cases, also, they branch off and devote a good deal of attention to the problem of estimating and give the impression that this is the end and object of cost accounting.

There are a few courses, however, which are developed on a really rational basis, that undertake a thorough discussion of the underlying theories and some of the more important methods by means of which those theories are applied in actual practice, that indicate to the student what are the outstanding benefits to be obtained from cost records and how to go about getting them, that develop a student's ability to take hold of an individual problem and apply what he has already learned to its solution and increase the keenness of his judgment in regard to what kind of records it is worth while keeping and into what detail they should be divided.

(To be concluded.)

THE ACCOUNTANT AS AN EFFICIENCY EXPERT

By A. P. R. DRUCKER, Colorado College

It was in the main due to an accident that the efficiency idea was taken over by the engineering fraternity. Frederick M. Taylor, the pioneer in the movement, took up the engineering profession after he became interested in efficiency. He therefore took this idea over with him to the engineers. The accountants, had they interested themselves in that direction, would have made better efficiency experts than the engineers, for they are by education and training better fitted for efficiency work.

In the first place the accountant has a better grasp of business and economics subjects because of his education than has the engineer. Second, the accountant, coming constantly into contact with business men, has a better understanding of human relationships. He can deal better with people, whereas the nature of the engineer's work enables the latter to deal best with machinery and construction problems. An excellent judge of problems connected with bridges, roads, etc., he is more or less at a loss when confronted with problems involving human relationships. Hence we have the failure of the efficiency manager in his dealings with labor and the trade unions. The efficiency engineer has tried to handle the workman as though he were a machine. The accountant on the other hand, accustomed as he is to dealing tactfully with people, would never have antagonized labor against the whole efficiency movement as has the engineer.

Neither would the accountant have confined his activities to big business like the engineer; for whereas the latter comes in contact with the big industrialist mainly, the former meets all kinds of business men—large, small, and medium. He would therefore have taken his efficiency ideas with him wherever he went—to store and shop as well as to factory. Indeed he would have introduced his methods where they were most needed, namely, in the small industries and in the retail stores of sole owners. This class of business men are now being slowly driven out of existence by the big inter-

ests. The small, independent manufacturer is losing ground in his competition with the big corporation, which can undersell and underbid him at every turn.

And the same holds true for the sole owner of the retail business. He too is being driven to the wall by the chain store and the mail order house. These can sell goods at a lower price and still make a greater profit on them. The reason why these smaller concerns are being crowded to the wall is mainly because they lack efficient methods of conducting their business. The large concerns have their staffs of experts to advise the managers in their perplexing problems; they have their economists and statisticians to advise them on methods of buying and selling, on formulating plans for cutting operating and other costs, and for timing their various activities in accordance with the general economic situation.

The small business man has no one to advise him. He is consequently no match for the big industrialist with his expert at every turn. As time goes on it becomes increasingly evident that the small business man will have to yield to the chain store manager who will take his place, and the present-day independent owner of a small business will inevitably become an employe of big business.

To break up this sturdy middle class of independent business men would spell real loss to the community. They are the supporters of the churches, the builders of the towns, the men whose public spirit makes possible every kind of welfare and civic work. As citizens of more or less permanency they have pride in the attractiveness and orderly administration of their home town. As a group this type of business men is therefore a most valuable asset to his community, and should be preserved by all means.

And it is this group which the accountant would have aided as an efficiency manager. It is these men he would have taught the ways of efficiency and scientific management in which as a class they are so sadly lacking. He would have shown them the best methods of competing with the big industries and the ways in which they might use their personality and their own business reputation to the best advantage. And the accountant can still save this group to the community and the state. He can help them win their fight against their competitors; he can show them ways of increasing their patronage and making their business yield greater profits.

Even now, if the accountant will undertake the work of efficiency expert for his business clients he can be of help to them and at the same time increase his own clientele. In the first place; he can issue a small bulletin for the benefit of his clients, to lay before them new ways of selling, new ideas in management, and efficiency practices which they may adopt to advantage. There is no doubt that they will listen more readily to him as their accountant than to such an outsider to their business from their own point of view as the engineer, in whose grasp of their peculiar problems they have hardly the requisite confidence. Their accountant they know and they have the utmost faith in his ability and good judgment.

But perhaps the best service which the accountant can render the small business men is by serving in the capacity of their economic and statistical adviser, keeping them posted on economic conditions throughout the country and on the periodic changes in the business cycle. Dun and Bradstreet's statistical data show that the largest number of business failures occur during periods of business depression. This is natural, of course, since the phenomenal economic changes baffle the average business man. Lacking an understanding of the nature of such a depression, he is at a loss as to how to grapple with it. The big business man on the other hand, getting all his information in advance, not only can avoid the losses incident to a depression, but he can in many instances even take advantage of a situation. The small business man, lacking this understanding, usually buys too heavily before the depression and sells before the period of prosperity. He is thus always on the losing side.

Here the accountant who is a student of economics can be of the greatest help. He is thoroughly familiar with the various aspects and problems of the business cycle. He can advise his client before hand when to buy and when to pay his debts; when to push sales and when to lie low and mark time. Thus the accountant would be helping his clients when they most need his help, and therefore save them from failure. But if the accountant can help his small client by keeping him posted on the national business cycle, he can help him even more by providing him with information in regard to the still more baffling phenomenon of industrial and local business cycles.

A large number of business men are now more or less familiar with the national business cycle, which completes its round every industrial business changes that take place with great regularity. They have a hazy idea that every industry has its own peculiar ups and downs, but they do not know the details and consequently are never able to anticipate conditions. They may have a vague idea, for instance, that corn has a cycle of prosperity-depression all its own; that cotton, textiles, livestock, copper, etc., have their own cycles. But they do not know how to find out in time when changes in these commodities will take place or how to take advantage of the various cycles in their buying and selling operations. They are, therefore, more often than not caught in the trap of their own ignorance and pay the price.

The same is true with local business fluctuations. Every locality, as we know, has its own business cycle. Only a student of economics, who knows how to use statistical data, can construct a local business barometer from local indications. An accountant who has been trained in the methods of obtaining information from many sources, should find no difficulty in bringing together the necessary information from various sources and from them construct a business barometer, forecasting conditions in the immediate community. The accountant, who makes out profit and loss statements for so many different business interests, is in the best possible position for interpreting at all times the trend of local business. By collecting a few additional facts he can readily construct a dependable local business barometer for his clients. The banking and general money condition he can get from the local clearinghouse. The Federal Reserve will gladly send him its regional reports monthly. The Commerce Department will furnish him with daily and weekly reports on business conditions. The Department of Agriculture also will send its crop estimates and information on local crop conditions. The realtors' organization will keep him posted as to real estate and rent situations. The employment bureaus—state and private—will give him information as to the employment situation in his vicinity. From the city building department he can learn of local building conditions. From all these sources he can secure the necessary data for making his advice authoritative to his clients. If he wishes to be still more exact in the construction of his barometer, he can get from the post office reports as to increase or decrease

of its monthly business. The telephone company likewise will give him useful information on increase or decrease in the number of business telephones and increase or decrease in the service rate.

With these data at hand, an experienced accountant should have no difficulty in constructing an excellent business barometer for his local clients which will forecast for them future local business conditions. By affording them this information he will save them from failure in many cases and in others actually increase their profits. He will thus be rendering a signal service not only to them immediately but also to the community and himself as well.

IS IT MACHINERY OR IS IT JUNK?

By CHARLES H. PORTER, *Massachusetts Institute of Technology*

Probably the most important production problem confronting the average manufacturer today is whether or not to scrap old machinery or equipment and buy more modern machinery of higher efficiency. While all the factors involved cannot be evaluated by an exact computation in dollars and cents and the final answer must necessarily involve the element of judgment, nevertheless the answer will in most cases be no better than a guess unless those factors which can be measured exactly in dollars and cents have been correctly reduced to figures. What are these factors and what is the reaction of each on the final total?

Some of the printed discussions of this problem have included as one of the determining factors the present "book value" of the machinery to be scrapped. If one stops to think, it is evident that any such solution must be in error. Whether or not we have charged more than adequate or less than adequate depreciation in the past has nothing to do with the case. The additional investment which we are contemplating is the difference between the cost of the new and the amount that can be realized by the sale of the old at its today's second hand value. What we really want to know is whether at the end of X years, the cash value of our assets will be greater if we buy machine "a" or if we continue to use machine "b."

Another factor which is frequently overlooked is the effect of compound interest. If the comparison is for two years only, this is not important. As the period increases its importance increases. Certainly no solution can be theoretically correct which ignores it.

It may be interesting to work out first the simpler problem, omitting the effect of compound interest and then the more exact solution which includes it.

Let X = The number of years for which the relative cost is to be compared.

V_a = Cash value today of machine "a."

V_b = Cash value today of machine "b."

In the case of a new machine the cash value today will obviously be its cost plus expense of installation. In the case of an old machine the cash value today is the second hand sales value less the cost of removal.

S_{ax} = Cash value at end of X years of machine "a."

- S_{bx} = Cash value at end of X years of machine "b."
 N = Number of units of output per year.
 O_a = Operating expense per year of machine "a" for those items such as piece work wages, liability insurance, power, and repairs which are approximately proportional to the rate of output.
 O_b = Same items for machine "b."
 F_a = Fixed charges on machine "a" including taxes, fire insurance, rent of space occupied by the machine, etc., but excluding interest on the cost of the machine, depreciation, and any arbitrarily allocated portion of factory overhead actually unaffected by the substitution of machine "a" for machine "b."
 F_b = Same items for machine "b."
 I = The rate of interest to apply to the values V_a and V_b to cover the annual cost of interest, but not depreciation, on the respective machines.

If we wish to compare the total cost of a group or battery of machines "a" with the total cost of an alternative group of machines "b," it is obvious that the above symbols can be taken to represent the groups rather than the individual machines.

The total cost of turning out N units of product per year for X years with machine "a" will then be:

$$T_a = V_a - S_{ax} + X(O_a + F_a + IV_a)$$

and for machine "b"

$$T_b = V_b - S_{bx} + X(O_b + F_b + IV_b)$$

The saving or loss for any number of years (ignoring compound interest) will be:

$$\begin{aligned}
 T_a - T_b &= (V_a - V_b) - (S_{ax} - S_{bx}) + \\
 &X [O_a - O_b + F_a - F_b + I(V_a - V_b)] \\
 &= (1 + IX) (V_a - V_b) - (S_{ax} - S_{bx}) \\
 &\quad + X(O_a - O_b + F_a - F_b)
 \end{aligned}$$

The average cost per year for machine "a" will be:

$$A_a = \frac{V_a - S_{ax}}{X} + (O_a + F_a + IV_a)$$

If, as is often the case, the question takes the form, "How long will it take machine "a" to pay for itself?" $T_a = T_b$ and we have

$$X = \frac{(V_a - S_{ax}) - (V_b - S_{bx})}{(O_b - O_a) + (F_b - F_a) - I(V_a - V_b)}$$

It should not be overlooked that in order to solve this equation, we have to assume that S is constant and independent of X .

The cost per unit of product for the elements included can be found by dividing T_a or T_b by NX , but if the production capacity of the two machines is different, this comparison may be misleading. For example, assume that machine "a" has twice the output of machine "b" and that there is a reasonably certain market for the additional product. It should not be taken for granted that the cost per unit of product of the second machine "b" will be the same as the first machine "b." For one thing, the cost today of a new machine "b" will be greater than the second hand sale value of the old machine "b." On the other hand, the repairs might average somewhat less. To make a fair comparison we should compare equal production capacity and this means taking the total combined cost of old and new units of machine "b" to compare with the cost of machine "a."

In the above solution interest on the difference in the cash values today of the two machines "a" and "b" has been charged in full each year against machine "a." This is unfair to machine "a" as after the first year the interest on the savings of operating expense made in the first year are properly to that extent an offset against the interest cost of carrying machine "a." Similarly in the third year the interest on an amount equal to two years' saving of operating expense should be credited to machine "a." Such an analysis will require the summation of a series and it is safe to say that this branch of algebra has become distinctly rusty in the minds of most accountants and engineers.

A short cut is provided, however, by the use of compound interest, compound discount and annuity tables. By their aid it is a simple matter to find the sum of money which would provide exactly for all the costs of acquiring and operating machine "a" or machine "b" for X years if the unexpended portion of the sum at any time were invested at 6%, or any other stated per cent.

The method can perhaps be most easily explained by using definite figures for the number of years and the rate of interest. If we take X as five years and the rate of interest as 6%, we have the "total cost today" of the production of N units per year for five years on machine "a."

$$TCT_a = V_a - 0.747 S_{ax} + 4.465 (O_a + F_a)$$

$0.747 S_{ax}$ is the present value of S_{ax} dollars receivable in five years.

$4.465 (O_a + F_a)$ is the present cost of one payment today of $(O_a + F_a)$ dollars and four equal payments at intervals of one year.

This assumes that all the wages, fixed charges, etc., for each year are paid in advance the first day of each year, whereas actually they are in general paid week by week or month by month throughout the year. If we assume that these items are all paid on the last day of the year, the coefficient of $(O_a + F_a)$ will be not 4.465 but 4.212. The common printed tables do not provide for an intermediate figure but an average of the two is sufficiently good for our purposes, as most of the figures to which the coefficients are applied will be estimates only. Using the average we have a similar equation for the "total cost today" of owning and operating machine "b" for five years:

$$TCT_b = V_b - 0.747 S_{bx} + 4.339 (O_b + F_b)$$

We cannot as in the approximate solution equate the total costs for machine "a" and the machine "b" and solve for X because the coefficients are functions of X . The most illuminating comparison will be to compute the "total cost today" of both machines for several different values of X , the time element, and plot the results.

A numerical example will show more clearly than words the difference between the two methods. Let us assume that in a certain factory manufacturing a chemical product, there are seven units of equipment, each requiring for its operation a crew of two men. The same output could be obtained from two larger and more modern units with a crew of four men each. The equipment is so specialized that its second hand value is not greatly in excess of its junk value. The new units will cost \$25,000 each and will have an estimated second hand value a few years hence of only \$1,250 each. The old units have today a total second hand value of \$4,000 and this would probably drop to \$3,000 after a few more years of use.

Assuming values for the other factors, we have:

V_a	=	\$50,000
S_{ax}	=	\$ 2,500
O_a	=	\$12,000 (wages) + \$5,000 (other items) = \$17,000
F_a	=	\$ 5,000 (higher taxes)
I	=	6%
IV_a	=	\$ 3,000
and V_b	=	\$ 4,000
S_{bx}	=	\$ 3,000
O_b	=	\$21,000 (wages) + \$6,000 (other items) = \$27,000
F_b	=	\$ 5,500 (greater factory area)
IV_b	=	\$ 240

By the approximate formula first developed, the time in which the new equipment will pay for itself is:

$$X = \frac{(50,000 - 2,500) - (4,000 - 3,000)}{(27,000 - 17,000) + (5,500 - 5,000) - (3,000 - 240)}$$

$$X = \frac{46,500}{7,740} = 6 \text{ years}$$

By the more exact method, the "total cost today" of owning and operating the new equipment for five years will be:

$$\begin{aligned} \text{TCT}_a &= \$ 50,000 - 0.747 \times \$2,500 + 4.339 \times \$22,000 \\ &= \$143,590 \end{aligned}$$

and for the continued use of the old equipment for five years the "total today cost" will be:

$$\begin{aligned} \text{TCT}_b &= \$ 4,000 - 0.747 \times \$3,000 + 4.339 \times \$32,500 \\ &= \$142,775 \end{aligned}$$

The difference in the "total cost today" is \$815.

This means that including compound interest at 6% the new equipment will pay for itself in five years, whereas the approximate solution indicated six years. In some cases this difference might be just enough to tip the scales in favor of new equipment.

Another way of looking at this more exact formula is to say that the greater first cost of the new equipment is

$$\$50,000 - \$4,000 = \$46,000$$

The present value of the difference in the scrap or salvage value of the old and new is

$$0.747 (\$3,000 - \$2,500) = \$375$$

The present value of the annual saving in operating costs and fixed charges (other than interest) is

$$4.399 (\$32,500 - \$22,000) + \$45,560$$

The additional "cost today" of the new equipment will therefore be

$$\$46,000 + \$375 - \$45,560 = \$815$$

which checks with the preceding computation.

Still another way of making the comparison is to say that if we invested the difference in the initial investment at 6% compound interest, we should have at the end of five years

$$1.338 \times \$46,000 = \$61,550$$

The difference in the then salvage values will be

$$(\$3,000 - \$2,500) = \$500$$

The value of the annual savings compounded at 6% from the middle of each year will amount to

$$5.806 \times \$10,500 = \$60,960$$

Or the additional cost of owning and operating the new equipment for five years will at the end of that time amount to

$$\$61,550 + \$500 - \$60,960 = \$1,090$$

which is the amount of the extra "total cost today" of \$815 compounded at 6%

$$1.338 \times \$815 = \$1,090$$

If the period of comparison were longer or if a higher interest rate were used, the difference between the results of the two methods would be greater.

In making the final decision in an actual case, the management often deducts an allowance for contingencies from the figured savings for the new machinery or equipment. In doing so care must be taken that the engineers and accountants have not previously added an adequate something for contingencies to the original estimates. To unconsciously in this way double the allowance for contingencies is obviously unfair to the proposed change. In using the approximate formula, it must be realized that the result does not give full credit to the machinery with the lower annual cost.

Compound interest and annuity tables should be part of the active equipment of every accountant. Why not use them?

VALUATION OF INVESTMENT SECURITIES

By DR SCOTT, University of Missouri

The relation of college training for a profession to practice of the profession is always a matter of vital concern to both practitioners and teachers. The striking of a proper balance between emphasis upon fundamental abstract principles and the introduction of students to the technique of the profession is a perennial problem. In a profession like medicine the initiate must be prepared for relatively independent work. He must be a comparatively finished product. Provision is made for a gradual assumption of responsibility on his part by the requirement of a period of apprenticeship as an intern. However, this internship does not bridge the gap between abstract researches into physiology, anatomy, bacteriology and allied medical subjects, on the one hand, and the practical problems of diagnosis and prescription on the other hand. The young doctor's training must include more technique than he would pick up in his apprenticeship as a hospital intern.

There is in all professional training pressure in the direction of stressing professional technique at the expense of its underlying theoretical foundations. Pressure for an over emphasis in that direction may come from the shortsightedness of practitioners, teachers or students. As an example of such shortsightedness, some engineering schools, among others, have gone through periods in which their emphasis has been too largely upon professional problems and too little upon essential principles. Take, for detailed illustration, a subordinate field in electrical engineering, telephony. Courses have sometimes been given in this field dealing chiefly with equipment and apparatus and their practical utilization. Such a course could hardly fail to be continually behind current practice. And even if it were not currently out of date, the student would find much of his information obsolete by the time he was in a position to use it. However, a course in electrical circuits and the physical theory underlying telephony is not subject to such a rapid depreciation by obsolescence. At the same time it affords the academic man a field in which he can and should lead practice rather than follow it.

Schools of business administration are concerned with preparation for professional activities which are very diverse in character. The individual who goes into business typically takes a job with a business enterprise in which he is one small unit in a large organization. His situation is not like that of the medical student. Both the character of his prospective activities and the manner of his introduction to them make it desirable that his training should deal largely with theoretical fundamentals and only to a minor extent with distinctly professional problems and technique.

Even the student of accounting, in spite of his somewhat more professional outlook, is in much the same situation as other students of business administration. Accounting procedures differ widely from one sort of business to another. In fact they differ widely for similar kinds of enterprises. And even the practices of reputable public accounting firms show a considerable range of variation. When one sets out to determine what is standard practice with reference to specific procedures, he frequently encounters much difficulty. Accounting technique is continually in process of development through use. Hence any effort to base the teaching of accounting upon practice is discouraging—not to say hopeless. It is like teaching technique and equipment in a course in telephony.

If accounting really is a subject to engage the major interest of students following a curriculum of higher education it should rest upon a development of theory which is relatively independent of practice. This theory should interpret practice and point the way of its further development. It should set up standards by which current practice can be measured. It should be for the practice of accounting roughly what the physical theory underlying telephony is to the engineering side of the telephone industry.

This somewhat lengthy introduction has been presented as a justification for the academic character of the following discussion.

Valuation of Bonds

In making an inventory valuation of bonds one is forced to choose between several different bases or methods of valuation. This discussion will consider in order the following methods:

1. Cost.
2. Market.
3. Cost or Market—The Lower of the Two.
4. Cost and Market.

Cost. If a bond is bought at a discount because it promises payment of a rate of return below the market rate of interest its value typically increases with the passing of time. This increasing value reaches par at the maturity of the bond. A series of calculated values may be obtained for the bond based upon the discount rate used in its purchase. In any application of a cost basis to bond inventories it is this series of values which is significant rather than the amount of cash paid for the bond at its purchase. In such a purchase the discount obtained arises through a reconciliation of the nominal rate paid by the bond with current earning rates for similar investments. The amount of discount is included in the estimated income from the investment and the amortization of the discount account by the use of a constant rate of discount for inventory purposes affords a logical basis for income allocation. It is this fact which constitutes the chief argument for the use of such an adjusted cost basis for the inventory of bonds. A disadvantage in its use arises, however, from the fact that with changing market conditions it may not present bond investments at their current realizable values.

Market. Taking the inventory of bonds at market value insures their appearance in the balance sheet at figures which, under ordinary circumstances, are above criticism provided there are regular market quotations. And if fluctuations in their prices are carried to income the results for the income record will approximate results obtained by the use of the adjusted cost basis. Indeed, if market conditions remain constant, and the credit position of the company is unchanged, the two methods should afford identical results. The advantage of the market basis, when market conditions change, lies in the fact that it does show investments at their current realizable values. An accompanying disadvantage arises in its leaving the determination of reported income from bonds to the vagaries of the market. This income would be more one year and less another than it would under the use of the adjusted cost basis.

From the foregoing points of argument there is deduced a rule to carry bonds upon a cost basis if they are to be held as long term investments; but to carry them at market value if there is likely to arise at any time a necessity for selling them. In other words, when a proper statement of income from them is the chief consideration

keep them upon a cost basis. But if their current realizable value is the matter of chief concern, carry them at market value.

Cost or Market—The Lower of the Two. The conventional lower of cost and market rule has nothing in its favor except custom and the doubtful advantages of an undervaluation of assets. It does not present investments at their current realizable values; nor does it present income from them in a logical, satisfactory manner. The illogical character of the rule is mitigated somewhat in a variation which permits the showing of increases in market values to the extent that they can be used to offset decreases in market values of other securities owned. Even in this form, however, the rule remains a rule of thumb without a logically defensible foundation.

Cost and Market. Clearly a desirable method of treatment for bond investments would be one which included the outstanding advantages of both the cost and the market bases of valuation, without their disadvantages. Such a method is made possible by use of the simple device of additional valuation accounts; that is, valuation accounts in addition to Bond Discount or Bond Premium. For example, the purchase for \$9,250 of a 5% bond with a face value of \$10,000 would be recorded according to the cost method as follows:

Bonds	\$10,000	
Cash		\$9,250
Discount on Bonds		750

If, when the first interest payment was received, the amortization of discount was \$110, the proper entry would be the following:

Cash	\$500	
Discount	110	
Int. Earned		610

The foregoing entry would give an adjusted valuation of \$9,360 for the bond. If at this date a balance sheet were being prepared and the market price of the bond were \$9,425, an adjustment of the above value to this market price could be obtained as follows:

Appreciation of Bonds	\$65	
Reserve for Bond Price Fluctuations		65

If, further, at this stage of the record the bond were sold for \$9,425 the entry to record the sale would be as follows:

Cash	\$9,425	
Discount	640	
Bonds		10,000
Appreciation of Bonds		65

These entries would leave a credit balance of \$65 in the Reserve for Bond Price Fluctuations. If the bond had sold for \$9,500 the proper entry to record its sale would then have been as follows:

Cash	\$9,500	
Discount	640	
Bonds		10,000
Appreciation of Bonds.....		65
Res. for Bond Price Fluctuations.....		75

Since the market price of bonds will sometimes be under rather than over the adjusted cost value, the account here used for appreciation of bonds might well be an Appreciation-Depreciation account and be allowed to take care of the fluctuations both ways. Such an account could be opened for each bond investment in a subsidiary record while a single controlling account afforded the proper adjustment for the controlling account, Bond Investments. With the use of such a method of treatment, bond investments might well be presented as follows:

Bond Investments—Par	\$165,000	
Less Net Bond Discount.....	15,000	
Present Value Upon Purchase Basis...	150,000	
Plus Net Appreciation.....	5,200	
Present Market Value.....		\$155,200

Thus this method provides for the presentation of essential information about investments in bonds and at the same time permits the handling of income from them in a consistent, satisfactory manner.

VALUATION OF STOCKS

Discussion of the valuation of stocks resolves itself into a classification based upon the purposes for which stock is held. Stock may be owned for purposes of control, for speculative gains, or for investment. The valuation of stock held for each of these purposes will be discussed in the order named.

Stock Held for Control. Stock held for control is a fixed asset. Its possession signifies that two or more corporations or separate business enterprises are controlled by one financial management. If a statement of the financial status of this supereorporate unit is desired, it is necessary to prepare a consolidated statement. In such a consolidated statement stock owned will be eliminated. Its present book value is therefore not particularly significant. Keeping

such stock at cost gives an indication of the controlling company's equity in the subsidiary at the time of purchase of the stock. At the same time it does not interfere with an accurate statement of assets and equities included in the consolidated unit. Hence such investments are best carried at cost.

Stock Held for Speculation. Speculative investments in stock may be defined as those in which the holder expects to make a profit from a re-sale of the stock rather than from dividends. They should be carried at current market values. Gains realized and losses suffered through fluctuations of the values of such holdings should be treated as current incomes and expenses for the enterprise engaged in speculative trading. And similar treatment should be accorded gains and losses from operations on the short side of the market. The speculator is not confronted by any necessity of making provision out of gains from rising prices for losses resulting from falling prices. He may indeed gain from a falling market as well as from a rising market. Whatever the existing status of his operations, current market prices should be taken as the basis for determination of his gains or losses as the case may be.

Stock Held for Investment. Accounting for more permanent investments in stock requires more than the application of a simple rule of thumb basis of valuation. The crucial point in accounting for such investments is the distinction between principal and income. The action of boards of directors in declaring dividends is not a satisfactory basis for making such a distinction.

If the principal of an estate held in trust were invested in stocks bought at \$140 per \$100 share, dividends declared upon the stock would not be a proper criterion of income available for a life tenant of the estate. Dividends paid out of surplus accumulated prior to the purchase of the stock would tend to deplete the principal of the estate if they were not reserved as a part of it. A stock dividend based on such earnings, for example, would not properly go to the life tenant. Nor would a stock dividend based on earnings accumulated after the purchase properly go to the remainder-man. A decision of directors to reserve for extension of the enterprise all profits in excess of a stated dividend should not deprive a life tenant of his equity in those earnings. Profits accumulated but not paid in dividends are, in any common sense analysis, a part of the current

stockholder's income. A partner's earnings are not limited to his withdrawals. Why should a stockholder's earnings be so limited?

Nor does the market value of stocks afford a satisfactory basis for the separation of principal and income of stock investments. The price of stock may rise because earnings are reserved from distribution. It also may rise because of a change in the general price level or because the company's earning capacity increases without the accumulation of undistributed earnings.

Nor, finally, does the conservative inventory rule of cost or market, whichever is the lower, afford help toward a solution of the problem. In fact it merely makes the worst of a difficult situation.

The desired solution of the problem of distinguishing between principal and income appears to run along the line of the cost and market rule for valuation of bonds. That is, stocks bought for investment may be carried at cost with adjustments for accumulations of undistributed earnings and for dividends declared from accumulated earnings. At the same time this adjusted cost value may be reconciled with the current market value of the stocks by use of a valuation account. For example, a stock bought for \$115.00 would be increased on the books to \$118.00 if the book value of this stock in the company's own accounts increased \$3.00 through the accumulation of undistributed earnings. The offsetting credit would go to current income. If in addition the share of stock paid a dividend of \$6.00 out of current earnings, the total income from it would be \$9.00. If, however, the market value of the stock had increased to \$125.00 a further adjustment would be necessary. This could be effected by debiting Appreciation of Stock \$7.00 and crediting a like amount to Reserve for Fluctuations of Stock Investments. This reserve would be credited for all increases of market prices relative to adjusted cost values and debited for all decreases relative to the same standard. As in the case of bonds one valuation account could be used for both appreciation and depreciation of each investment with a single controlling account to afford a net adjustment for all such investments. If after the above adjustments the share of stock in question were sold for \$122.00 the proper entry for the sale would be as follows:

Cash	\$122.00	
Reserve	3.00	
Stock Investments		118.00
Appreciation of Stock Investments...		7.00

This entry would leave a balance of \$4.00 in the reserve against which would be chargeable future decreases in values of stocks relative to their adjusted cost prices. Under this plan stock investments might appear in the balance sheet as follows:

Stock Investments, Cost.....	\$68,000
Accumulations of Undistributed Earnings.....	4,800
	<hr/>
Cost Plus Accumulated Earnings.....	\$72,800
Appreciation of Stock Investments.....	3,700
	<hr/>
Present Market Value.....	\$76,500

The above form of presentation would necessitate an independent record of earning accumulations whereas the previous discussion assumes their inclusion in the investment account itself.

The general method here presented affords a logical basis for separation of investment income from increases and decreases of the principal tied up in the investment. It rests the determination of income from the investment squarely upon an accounting basis in the books of the company whose stock is in question. In doing so it becomes subject to the criticism that the income of an enterprise owning investments in stocks becomes dependent in part upon other accounting systems as well as its own. Admitting the pertinence of this criticism it is hardly conclusive. The criticism does not justify use of an even less desirable method. If accounts are not properly kept the remedy for that deplorable situation is not less dependence upon accounts but a higher standard of practice.

THE EVOLUTION OF THE JOURNAL ENTRY

By A. C. LITTLETON, *University of Illinois*

The journal entry is an important bookkeeping mechanism which serves as a means of converting a non-technical statement of a transaction into a species of technically-formed, intermediate statistical record. It is, moreover, particularly characteristic of double entry—more characteristic perhaps than the ledger—because it so clearly expresses the inevitable duality which is concealed in all transactions. For this reason, undoubtedly, journalizing has always been a very important element in the teaching of double entry bookkeeping; and in some countries, it is a legal requirement that all transactions pass through the journal. This last probably is due to the desire to have the facts conveniently assembled for authentication rather than to any wish to give further emphasis to the importance of the journal.

But the importance of the journal entry in modern practice seems to be somewhat on the decrease, at least in America. Whether or not the processes of evolution will finally remove it altogether, no one knows. But one can say that it is not indispensable, and consequently might conceivably disappear altogether from bookkeeping practice.

It is easy to get curious about this element of bookkeeping method which was added to the structure after double entry was quite well worked out, and which might sometime drop off the structure again—an outgrown appendage like a polliwog's tail.

What was the journal entry like in its early days, and what evolution has it passed through in five hundred years?

The earliest journal entries were not what one would perhaps be inclined to expect in view of the early characteristics of the ledger account.* Ledger entries were at first complete sentences—whole transactions entered twice *in toto*. But the earliest journal entries that we know were not sentences to be rewritten in the ledger. On the contrary, they were, even in the first appearances, quite technical in form and phrasing. The uninitiated might understand a ledger entry, for the wording expressed a complete thought, but he could

*Cf. "The Evolution of the Ledger Account," *The Accounting Review*, December, 1926.

hardly grasp the meaning of a journal entry unaided, for the expression of thought was very much abbreviated.

Before speculating upon the origin of the peculiarities of journal entry form, let us look at some typical journal entries of the fifteenth and sixteenth centuries.

JOURNAL ENTRIES OF THE FIRST TYPE

*Journal Entries of the First Type**

ORIGINAL	TRANSLATION
(1430)	
1. <i>Per Cassa de contadi a ser francesco baldi e fratelli—per resto de zafaran.</i> L-s viii d iii	1. <i>By ready money to Francesco Baldi and Brothers—for balance of saffron.</i> L-s8 d3
(1494)	
2. <i>Per Ser Zuan d' Antonio da Messina: A Cassa contati a lui per parte de'sopra ditti zuccari secondo la forma del mercato</i> L-s-g-p-	2. <i>By Zuan Antonio of Messina: to cash, paid to him for part of the above mentioned sugar according to the terms of the agreement</i> L-s-g-p-
(1525)	
3. <i>Per Bancho di Cappelo e Vendramine, a chavedal i quali me trovo aver nel detto bancho come per suoi libre apar.</i> L40 s-g-p-	3. <i>By Cappelo and Vendramini's Bank, to Capital, which I find I have in the said bank per their books.</i> L40 s-g-p-
(1540)	
4. <i>P(er) Pro e Danno //A spese diverse per piu spese fatte l'anno presente, come in esse appar, per saldo suo.</i> 33L 19s-g	4. <i>By Profit and Loss, to Sundry Expense, for various expenses made in the present year, as appears in the balance of that account</i> 33L 19s-g
(1543)	
5. <i>By profyt ende onprofyte / aen Capitael van my Nicolaes Forestain somma sommarum dat ick bevinde gheprofiteert te hebben binnen den tijt gheduerende disen boek—.</i> L cliiij. s xiiij d i.	5. <i>By profit and loss to capital of myself Nicholas Forestain, the sum total that I have profited within the period of this book</i> L cliiij. s xiiij. d i.
(1549)	
6. <i>Für Ingwer // an nutz und Schaden für nutz und gewin ich an dem Ingwer gehabt fl. 6</i> All of these examples, in whatever language they may be written, exhibit the same technical characteristics. The typical form in all of them is:	6. <i>By Vinegar, to Profit and Loss, for loss and gain I have had on Vinegar.</i> fl. 6

By A., to B.

*Sources are cited at the end of the article.

This is a technical form first because the meaning is not obvious in the wording; something is left to be implied or understood, and second because the prepositions "per" and "a" have been given a special significance not in common usage. The old text books are very careful to point out that "per" must come first in the journal entry and that it indicates, or labels, the debtor. The creditor is always to be named next and is indicated by "a". Thus a rule explains the usage, but not the significance. At no place do the writers explain how "per" and "a" came to be associated with "debtor" and "creditor", respectively.

The absence of any authority showing how these technical meanings came about throws the matter open to conjecture and inference. The question is intriguing enough to be dwelt upon for a few paragraphs.

A hint of a possible starting place may be found in the phrasing of some of the early German journal entries. Even though the dates of the German examples are later than many of the Italian entries in the established form, these particular German entries are not cast into the same earlier technical form. The following is a sample entry by Mathew Schwartz, the chief bookkeeper for the famous Fugger family of German merchants. It is dated 1516:

ORIGINAL*

*Uns soll herr Jacob Fugger duc. 85,
die sollen wir a Cassa, umb souil
hat Matheus Schwartz hie zu Vene-
dig fur sich gebraucht.....dc 85*

TRANSLATION

*To us Mr. Jacob Fugger shall
[give] 85 ducats, which we shall
[give] to cash, for as much as
Mathew Schwartz has used here at
Venicedc 85*

The words in *italic* type are the ones which have technical significance; the words in brackets in the translation are added to the original to complete the obvious meaning. Thus completed the journal entry assumes the form of a simple sentence quite devoid of technicalities, and therefore understandable to anyone who reads it. The word "give" is not in the original entry of 1516, and without that word even this entry becomes semi-technical, since a missing word is to be implied.

Back in 1440-1444, however, unsystemized memoranda of the time contained the phrases† "*er sol geben*," "*ich hab im gegeben*" ("he shall give," "I have given him"), and the like. Thus it seems clear

*Penndorf, *Geschichte der Buchhaltung in Deutschland*, p. 50.

†Penndorf *op. cit.*, p. 31, 32.

that the Germans had started with complete sentences, but by 1516 had begun to drop words out of the bookkeeping entry so that the record was already becoming technical. But the process had not yet gone so far as to make the full sentence hard to reconstruct.

On the other hand, the entry given above (No. 6) was only thirty-three years later (1549) and, it will be noted, its form was already so technical as to be hard for the uninitiated to understand. It is not at all a whole sentence, whereas the entry of 1516 was very nearly a complete sentence. The entry of 1549 is, moreover, identical with the Italian form. This leads to two suggestions. The first is that the established Italian form probably did not make itself felt in Germany until some time later than its early use in Italy (1430). The second suggestion here is that the technical Italian form of journal entry might possibly be experimentally reconstructed into a complete sentence which could have been so changed in the course of time by dropping out words as to produce in the end the brief, technical expression used in the books, namely:

By A———, to B———

In order to follow up this thought, it is necessary to start with a hypothetical ledger account in the early Italian manner. On the Cash page, debit side, it might read:

"Cash shall give the stated amount
to Francisco at his pleasure for
coins this day deposited."

On Francisco's page, credit side, it might read:

"Francisco shall have (i. e., receive)
the stated amount at his pleasure
for cash this day deposited in
coins."

Certain conditions must now be taken into consideration.

(1) The journal was developed *after* the ledger, and presumably for the purpose of systematizing the day book memoranda preparatory to entry in the ledger. Consequently, journalizing would be then as now a process of translating the occurrence into ledger terms. Therefore it would have been natural at first to state the journal entries in phrases used in the ledger.

(2) The only words in the ledger entries which do not change according to the details of the transaction are: "shall give" and "shall have," and "to" and "for" (*per*=for or by). Therefore

those words at least would have to appear in every journal entry to put it in association with the ledger.

(3) The debit item (here "Cash") appears *twice* in the old form of ledger entry: once as the *first* part of the entry on the debit page* and again as the *second* part of another entry (the contra). The same is true of the credit item, reversed, of course. Thus in the above example, "Cash shall give" appears again as "for Cash" in the other account, and "to Francisco" appears a second time as "Francisco shall have" in the contra account.

(4) Our modern entry for the receipt of cash on deposit from Francisco would be:

Cashxxxx
Francisco xxxx

But in the old ledger both debit and credit from the journal were shown twice, or, that is to say, the *whole transaction* was written in both of the accounts concerned. Therefore, the old journal entry would need some unmistakable indication of a "four-pointed posting." Consequently, the old journal entry would have to have two elements not shown in the modern journal. In essentials, the only thing the old entry has that the new does not are the words "by" (or "for") and "to"; these constitute the third and fourth elements, and produce the form:

By Cash, to Francisco.

On the basis of these conditions the situation seems to be as follows:

(a) It is possible to reconstruct a fully worded journal entry to express the facts of the transaction in accordance with what would seem from the German examples to have been a very probable form of entry before technical omissions began to be made. This hypothetically reconstructed journal entry is as follows:

For Cash deposited this day, Francisco shall have the
stated amount, etc., and to Francisco, cash shall give
the stated amount at his pleasure.

If omissions or reorganization of the wording then appeared, the entry might have next been reduced to the type:

For cash, Francisco shall have
To Francisco, cash shall give

And if still later the duplicated phrases were neglected, the form might result in this type:

For cash, to Francisco

*This first phrase of the ledger entry is the one which later became the title of the account and was separated from the rest of the entry by being placed at the top of the ledger page. See *The Accounting Review*, *op. cit.*

This expresses the technical essentials of the journal entry of 1430 and for a long time thereafter. Why such a change should take place would be hard to say; perhaps it seemed to simplify the record and reduce the work of recording—a reason, no doubt, as satisfactory to scribes of that day as it still is to bookkeepers now. The essential facts for the ledger—to anyone who had been instructed in the book-keeping of the day—were still quite plainly discernable. They were a debit to a named account (and a contra), and a credit to a named account (and its contra)—four elements.

(1) "Cash" by its position first in the entry gives the name of the account which "shall give" (i. e., which is to be debited).

(2) "Francisco" by its position as second in the entry gives the name of the account which "shall have" (i. e., which is to be credited).

(3) "For" may be regarded as the symbol of the contra entry of Cash in the credit-account (Francisco).

(4) "To" may be regarded as the symbol of the contra entry of Francisco in the debit-account (Cash).

Thus it will be seen that the journal entry in its technical abbreviation names two things in its left member: (1) the account debited (Cash), and (2) the contra or explanation entry (by or for cash) belonging to the other account concerned. In its right member it names: (1) the account to be credited (Francisco), and (2) the contra or explanation entry (to Francisco) belonging to the other account concerned.

This technical form of journal entry would meet the requirements set out above of clearly stating (to a trained bookkeeper) the whole transaction in duplicate and in terms already in use in current ledger practice. It would form a perfect bridge of the gap between the memorandum record and the ledger, and it actually served that purpose in practice. But there is nothing authentic in this explanation of the origin of the form the entry took; it is only an attempt to piece together a plausible hypothesis out of what information is available. There is really nothing definite to show that journal entries were ever made in this complete-sentence, reconstructed form. If they had been, they must have evolved into the recognized abbreviated form (By A—— to B——) within a period of about

*A people which in 1494 favored the almost excessive use of abbreviations in place of complete words that is evident in Paciolo's *De Computis*, would

one hundred years.* Double entry ledgers are first found complete in the middle of the 14th century, say by 1340, the date of the accounts of the stewards of Genoa, and there could have been no urge to construct journal entries of any kind before double entry ledgers were in use; and the technical abbreviated form of journal entry is definitely known to have appeared by 1430. Whether or not that is long enough for such an evolution to take place—even assuming a great stimulus from the renaissance background—is an unanswered question.

With the later development of journal entries, much less speculation is necessary, for many examples are available and the forms in use are much less technical and easier to understand.

One of the most interesting facts about the old practices of double entry bookkeeping is the existence at the same time of two strikingly different types of journal entry, one of which has already been presented here. Yet different as they are in wording and technicalities, and different undoubtedly also as to origin, they nevertheless could serve the same function equally well without, apparently, introducing any confusion.

This other form of entry may prove to be even more interesting than the one first discussed, because in some ways it is closer to modern forms, or better perhaps, because the modern journal entry in English seems to evolve more naturally out of the form now to be considered than out of the "by and to" type of entry.

Journal Entries of the Second Type

(first variation)

ORIGINAL

(1491)

7. *Faro debetore* Tomasone del Buono e *creditore* spese di mercanzie di s. iiij d'oro per spese fatta a un fardello di panno corsato mandato da Lucca da Bonaccorsi a Libro 203/100 lib—siiiij d—

TRANSLATION

7. *I make debtor* Tomaso del Buono and *creditor* Merchandise Expenses for 4 s. in gold, for expenses incurred on a bale of cloth sent by Lucca da Bonaccorsi in the book 203/100 lib.—s4d—

earlier than this probably also have been inclined to accept as reasonable, perhaps even as desirable, the outright omission of repetitive phrases in bookkeeping entries where the meaning could be imputed into the words remaining, thus producing the technicality of form here discussed.

(1550)

8. *Cassa est debiteur* adj — ditto L. 987.13.4 Je Pierre du Mont ay receu de mon maistre Nicolas de Reo en argent constant L. 987.13.4 pour luy servir au train de marchandise dieu me donne la grace de bien servir

Nicholas de Reo

est Creditor L. 987.13.4

(1559)

9. *Fa debitore* Michele Gharo nestri a di 2 di maggio di s3 d xv porto a lui detti Contanti per sua provvigione del mese passato di aprile e *fa creditore* Cassa s. 3 d. 15

8. Cash is *debtor* on this day [for the] L. 987.13.4. I, Pierre du Mont have received from my master Nicolas de Reo, L. 987.13.4 in ready money to be employed for him by way of business. [May] God give me grace to serve well.

Nicholas de Reo

is Creditor L. 987.13.4

9. *Make debtor* Michele Gharo Nestri on May 2nd for s3 d15 posted to his debit account for his provisions of the past month of April and *make Cash creditor*—s3 d15

(second variation)

(1553)

10. Devonshire Kerseys is *debtor* to Laurance Fabian, draper, and is for 10 pieces at 36 s. a piece—etc.—L. 108 s—d—

10. _____

(1595)

11. Cassa van ghereden ghelde is *schuldich aen* Cappital van my 8000 guld. Ende is voor verscheyden penninghen van gout ende silver, so ick in mynen handen hebbe, omme daarmede te dryuen den handel van coopmanchap. Godt wil my verleenen ghewin, ende behaeden voor verlies. Amen....g. 8000

11. Ready money is *indebted to* Capital for my 8000 guilders. And is for different coins of gold and silver that I have in hand to use in pursuing the trade of merchandise. God will grant me profit and preserve me from loss. Amen...g. 8000

(1613)

12. Meale in Barrels is *debtor unto* stocke for 16 tuns remaining in the house.....736.00.00

12. _____

(third variation)

(1567)

13. Caisse d'Argent comptant es mains de Pierre Savonne *doibt* 12450£ 10s 6d qu'il met pour compte de son capital *credeteur* ledit Savonne.....12450-10-6

13. Ready money in the hands of Pierre Savonne *owes* 12450£ 10s 6d which he places in his capital account. *Creditor* is Savonne12450-10-6

(1570)

14. Roggen *soll an* Hering, hab ich mit Audreas Klur von Thorn einen stick getroffen—etc.
fl. 472.15—

(1588)

15. Chest or money *is Debtor or owes* to stock belonging to me, M. N. and is for—etc....L-s-d

(1594)

16. Casse *sol m.*11437.8 *Per Capital*. So viel befind ich bey dem Inventario an bahrschafft so ich dato zum glücklichen aufang dieser handlung in Cassa legm.11437.8

(1606)

17. Cassa *is schuldig* für fl. 8560. welche ich N. N. eingelegt habe in cassa zu handeln. *Creditor* mein Capital.....fl. 8560

(1608)

18. _____

14. Rye *owes to* Herring, which I have bartered with Audreas Klur of Thorn—etc...fl. 472.15

15. _____

16. Cash *owes m.*11437 for (to) Capital. As much as I find of ready money in the inventory I place in the cash box this day for the prosperous beginning of this business.....m.11437.8

17. Cash *is indebted* [owes] for fl. 8560 which I, N. N., have invested in cash for trade. My Capital [is] *Creditor*...fl. 8560

18. Trading Expenses *debit per* cash, for payment during the month as shown by the memorandum book4-0-0

It will be noted in the examples given of journal entries of this so-called second type that all of the cases do not run "true to type"; the wording is such as to produce three varieties of entries which, while slightly different in phrasing, are still basically related. The characteristics of these journal entries may be generalized as follows:

First variation: A is Debtor
B is Creditor

Second variation: A is debtor to B

Third variation: A owes to B

The second and third variations in form seem rather similar on the ground that, if A "is debtor," he likewise "owes," since by definition "debtor" is one who "owes."* Perhaps they are both also similar at heart to the entries of the first variation, since one might say: "A is debtor to B (who is creditor)."

*Yet one can hardly escape the feeling that this third variation is somehow related to the underlying phrasing of entries of the first, since the latter used (or implied) the technical words from the ledger ("shall give," etc.), and since the root word translated as "must" or "shall" also means "owe." The Latin *debet* from *debeo*, the Italian *deve* from *dovere*, the French *doit* from *devoir*, and the German *soll* from *sollen* all mean "he must" as well as "he owes."

In 1396 "*debet dare*" (he must give) indicated the debit side of the ledger (see *The Accountant*, March 27, 1926, p. 484). And in 1494, "*dee (deve?) dare*," the medieval Italian phrase, indicated the same thing (see Geijsbeek's reproduction of Paciolo's "*De Computis*" in "*Ancient Double Entry Book-keeping*"). The debit side of the modern French ledger is "*Doit*," and of the German ledger is "*soll*," both clearly derived from "he shall give." The Italian ledger, however, indicates the debit side by "*dare*" (give) rather than "*deve*" (shall), but the English ledger uses "*Dr*" (debtor). This English form is clearly different from all the rest, yet those journal entries which used the word "owe" imply the sense of "he shall give" more directly than do those entries which use the word "debitor."

But whatever virtue (or lack thereof) there may be in classifying entries of the second type into three sub-classes, it is clear enough that entries in this list are radically different from the first list in both form and phrasing*. The first type was probably devised from the wording of the ledger entries of the time and obviously led to the use, much later, of "to" in the debit and "by" in the credit of the English ledger entries. The second type of journal entry, on the other hand, would seem to be one to grow more naturally out of the "daybook" record of personal account transactions, and it is quite clearly a closer antecedent of modern journal entries than the first type is.

This last point is demonstrated not only by the form of the entry itself, but also by the fact that entries of the first type soon drop out of use. If some 25 journal entries from various sources, including those reported above, are arranged into columns according to type and in chronological sequence, it will be observed that the first type of entry predominates prior to 1550 (the entry in the Medici books of 1491 being the only example in the list of the second type to appear prior to the middle of the 16th century), and that after 1550, entries of the second type strongly predominate. Thus, while the real origins of the journal entry forms are not known, the direction taken by their evolution is unmistakable. The method of which Paciolo thought so highly was proved in the sequel to be inferior, for it was driven out of use by the other form.

*The sharp contrast in the two styles of journal entry raises the interesting question of whether or not such a difference could be the principal factor distinguishing the methods used in different localities. Paciolo says in the first chapter of *De Computis*, "This treatise will adopt the system used in Venice, which is certainly to be recommended above all others, for by means of this, one can find his way in any other." (Geijsbeek, *op. cit.*, p. 33.) Hence, one may conclude that the journal entry of the form:

By A ———, to B ———

was the Venetian method, and perhaps it may be that the entry in the form:

A is debetor to B

was the distinguishing characteristic of the Florentine method. Certain it is that this form was used in Florence by the Medici family in 1491.

But the evolution of the journal entry was by no means complete by the date of the last example given above (1608). The developments of the last three hundred or more years can be traced through journal entries in English alone. Since the changes which took place can therefore be easily read from the entries themselves, the discussion accompanying the examples need be but brief.

(8)

English Journal Entries After 1600

(1684)

19. George Pinchback Debitor to Kettles £75-8d
for 5 barrels—etc. 75/-/8

(1717)

20. P. Q. at Gibraltar my accompt current
Debtor to Voyage to Gibraltar, consigned to
P. Q. £322.9.7½—etc. 322/9/7½

(1754)

21. William Wife £360 to Sherry for 10 pipes
delivered to him in barter. 360/-/-

(1788)

22. Charges merchandise Dr. to paper taken for
use in shop. -/10/6

(1841)

- | | | |
|------------|--|----------|
| 23. Dr. | | Cr. |
| Mdse. 1000 | | B/P 500 |
| | | Cash 500 |

(1848)

- | | | |
|----------------------|------|------|
| 24. Cash to Sundries | 1590 | |
| to Bills Receivable | | 1500 |
| Profit and Loss | | 90 |

(1864)

- | | | |
|---------------------|------|------|
| 25. Merchandise Dr. | Dr. | Cr. |
| to James Munroe | 5000 | |
| | | 5000 |

(1900)

- | | | |
|-----------------|-----|-----|
| 26. Merchandise | 400 | |
| to Cash | | 400 |

Slight differences in the wording used by the different entries are apparent, especially in examples 19 to 22. The word "Debitor" in one entry is "Debtor" in another, or is wholly omitted in a third (No. 21). In still other cases the abbreviation "Dr" takes the place of the word itself.* These changes, however, are of relatively little significance. But subsequently—beginning a little before the middle of the 19th century—a more pronounced change appears. The tend-

*This abbreviation is found as early as 1690 in "Debtor and Creditor Made Easy" by Stephen Montague (3rd Edition). In the years around 1800 its use as in entry No. 22 was quite general; see Thomas Deilworth, "The Young Bookkeepers Assistant," London, 1792; William Jackson, "Practical Bookkeeping," New York, 1816; Patrick Kelly, "The Elements of Bookkeeping," London, 1833 (10th Edition).

ency is for the entries slowly to swing back again into a technicality of form; not the same technicality of

By A———, to B———

which had almost disappeared by 1550, but a technicality almost altogether of position. The debits and credits are now entered in separate columns and the name of the account credited is indented below the debit. Sometimes the abbreviation "Dr" is retained, sometimes it is omitted; the word "to" is retained, however, as the sign of the credit. But even this word "to" disappears entirely before long, and debit or credit is read out of the entry purely by the position of the words and figures. Not even the columns are labeled "Dr" and "Cr."

The form of the 18th century—"John Doe is debtor \$1000 to stock"—was a plain statement of fact which had to be posted in two places, but these two places were not forcefully indicated. The later developments improved the mechanics of bookkeeping by stating two distinctly separate facts, each to be posted according to its name and its debit or credit characteristic. The procedure leads one to think of *debits* waiting to be posted, not *debts* or *debtors*; to think of "accounting units" being transferred or tabulated and not of personified obligations. The process under modern usage becomes a wholly impersonal sorting of facts so arranged as to increase the accuracy of the sorting (posting).

Practice has passed from one stage to another—from a time of no journal entries when the full statement of the transaction was probably entered directly in the two ledger accounts concerned, to a period, say 1430 to 1550, of a highly technical form of journal entry preparatory to the record in the ledger, and from that into a long interval, of a rather indefinite ending, in which the journal entry expressed more or less fully a complete thought, and thence on to the modern period—now quite technical in form again—where the focus is the accurate sorting of accounting units.

But the end is not yet, for evolution is carrying this bookkeeping process still deeper into technicalities. Even the journal entry itself is dispensed with for a great many transactions recorded in numerous subsidiary books of original entry. Posting is direct to the ledger from the column totals of various special books for most of the transactions of modern American business; only a very minor portion of the ledger details came through formal debit and credit journal

entries. More than that, some large organizations have abandoned the time-honored left and right, debit and credit, divisions of the ledger account itself; a wide sheet becomes an account, its columns are sub-accounts, and entries therein are black and red instead of debit and credit.

Most of the clerks thus have no need to know bookkeeping as such. But for the persons charged with assembling the final bookkeeping data, the process is even more technical than any form of journalizing yet conceived. Only a complete knowledge of the whole ledger and of the characteristics of every book of original entry in the whole elaborate system enables one to bring the many separate debit and credit classifications and summaries together into a unified whole. As a result, the modern bookkeeper—the one who is responsible for uniting the maze of detail into a coherent whole—has a task the like of which none of his predecessors ever faced, and the very act of learning bookkeeping is harder than ever before. Bookkeeping has become a real technology instead of a simple clerical routine, and in addition there has grown up a profession of accounting which reaches quite beyond bookkeeping.

CITATIONS

(1) The sources of the several journal entries of the first type are as follows:

(1) From the account books of Andrea Barbarigo, 1430. Entries in similar form from the books of the Barbarigo family appear for 1457, 1482, 1496, 1507, 1537. See *La Partita Doppia*, by Prof. Vittorio Affleri, p. 60.

(2) From Luca Paciolo's *De Computis*, the first printed text on bookkeeping. See *Trattato de' Computi e delle Scritture*, by Prof. Vincenzo Gitti (1878).

(3) From a text by Antonio Tagliente. See *La Ragioneria*, Vol. III, by Prof. Fabio Besta, p. 380.

(4) From a text by Domenico Manzoni. See the photo-reproduction of a journal page in *Ancient Double-Entry Bookkeeping*, by John B. Geijsbeek, p. 82.

(5) From *Nieuwe Instructie*, by Jan Ympyn Cristoffels. See *Van Paciolo tot Stevin*, by Dr. P. G. A. DeWaal, p. 118. For other entries in English from the 1547 edition of Ympyn's book, see *The Accountant*, August 20, 1927, p. 261-268.

(6) From *Zweifach Buchhalten*, by Wolfgang Schweicker. See *Geschichte der Buchhaltung in Deutschland*, by Dr. Baldwin Penndorf, p. 126. Other entries in similar form by Dutch writers are given in *De Waal op. cit.*, Van Hoorebeke, 1599 (p. 253), Van Renterghem, 1592 (p. 230), Van den Dycke, 1596 (p. 242).

(2) The sources of the several journal entries of the second type are as follows:

- (7) From the account books of the Medici Bank in Italy. See Besta, *op. cit.* p. 325, there citing A. Ceccherelli, *I libri di mercatur della Banca Medici*.
- (8) From *Practique brifus pour tenir liveres de compte*, by Valentin Mennher de Kempton. See Besta, *op. cit.* p. 392. For other entries by the same author dated 1565 see De Waal, *op. cit.* p. 139; also *Maandblad voor het Boekhouden*, Oct. 1, 1926, and *Der Zeitschrift für Buchhaltung*, V. 7, p. 37.
- (9) From the account book of Benvenuto Cellini, in Ceccherelli, *op. cit.*
- (10) From *The maner and fourme how to kepe a perfect reconving—etc.*, by James Peele. See *The Accountant*, Jan. 16, 1926, p. 91 ff.
- (11) From *Baechhouwen op die Italiaensche maniere—etc.*, by Claes Pietersz. See De Waal *op. cit.* p. 164.
- (12) From *The Pathway to Knowledge—etc.*, by John Tapp. See *Maandblad voor het Boekhouden*, March 1, 1926, p. 172.
- (13) From *Instruction et maniere de tenir livres—etc.*, by Pierre Savonne. See DeWaal *op. cit.* p. 147.
- (14) From *Buchhalten Durch Zwey Bücher—etc.*, by Sebastian Gamersfelder. See Penndorf, *op. cit.* p. 142.
- (15) From *Briefe Instruction—etc.*, by John Mellis. See *The Accountant*, May 1, 1926, p. 64 ff.
- (16) From *Buchhalten fein Kurtz Zusammen Gefasst—etc.*, by Paschier Goessens. See Penndorf *op. cit.* p. 150.
- (17) From *Schöne Forma des Buchhaltens*, by Ambrose Lerice. See Penndorf *op. cit.* p. 215.
- (18) From *Coopmansbouckhanding op de Italiaensche wyse*, by Simon Stevin. See *The Institute of Bookkeepers Journal*, Dec., 1927, p. 322.
- (3) The sources of the English journal entries are as follows:
 - (19) Richard Dafforne, *The Merchant's Mirror* (entry for Jan. 30, 1633), reprinted in *Lex Mercatoria*, by Gerard Malynes (London, 1686).
 - (20) Thomas King, *An exact guide to Bookkeeping*, p. 3 of the journal (London, 1717).
 - (21) William Weston, *The Complete Merchants Clerk* (London, 1754), p. 2 of Journal A.
 - (22) Robert Hamilton, *An Introduction to Merchandise* (Edinburgh, 2nd Ed., 1788), p. 293.
 - (23) Thomas Jones, *Principles and Practice of Bookkeeping* (New York, 1841), p. 58.
 - (24) P. Duff, *Bookkeeping* (New York, 10th Ed., 1st Edition 1848), p. 29.
 - (25) Bryant & Stratton, *Bookkeeping* (New York, 1861), p. 12.
 - (26) Williams & Rogers, *Introductive Bookkeeping* (Chicago, Revised Edition, 1900), p. 22.

APPRECIATION FROM THE POINT OF VIEW OF THE CERTIFIED PUBLIC ACCOUNTANT

By JOHN R. WILDMAN, Haskins and Sells

The certified public accountant's interest in the subject of appreciation is a practical one. He is forced to consider the matter in connection with his review of accounting and his certification of financial statements.

The facts are, whether or not such procedure is justifiable, that physical property and intangible assets frequently are revalued by, or at the instance of, the owners of such possessions who attempt, in various ways, to give expression to the estimated increases in value. The certified public accountant, therefore, is confronted primarily with a condition; not a theory.

The authority for the restated value may be either a report of independent appraisers, or a resolution of corporation directors.

Inasmuch as the certified public accountant does not attempt to act as an appraiser, to pass judgment on the work of such persons, or to assume responsibility for the values which they fix, he accepts their judgment and qualifies his statements accordingly.

Inasmuch as corporation directors, in some jurisdictions, are empowered by statutes to fix values, and even though not specifically so empowered are within their corporate rights in so doing, the accountant usually takes the position that he must accept their judgment when they revalue assets, provided there is no fraud involved and they officially record such acts in the corporate minutes. In such cases the accountant places the responsibility on the directors by proper explanation in his statements.

The occasions for revaluations which give rise to estimated increases in values are various. One corporation may wish to bring out a bond issue. Another corporation may wish to offer an issue of preferred stock. Still another company may see in the procedure an opportunity to overcome a deficit in capital, thus preparing the way for future declarations of dividends payable in cash. A fourth concern may wish to use the restated value as a basis for depreciation and thus increase the charge for depreciation against earnings.

In one particular case, a company owning city realty considered using an appraised valuation for the purpose of restating its land and building values, crediting the estimated increment in land values to surplus available for cash dividends. This was done on the theory of equalizing the increase in value among the stockholders over a period of years, rather than giving the benefit of large profits to the shareholders at some future time when, and if, the profit might be realized.

In another case, a company having on its balance sheet a large amount of deferred charges which had accumulated as the result of numerous refinancings, caused certain intangibles to be revalued, credited the amount of the increase to capital surplus, and wrote off the deferred charges against such surplus.

Cases, illustrating the use which is made of asset revaluation in order to take advantage of an estimated increase in the value of such assets, might be continued at length. It is doubtful, however, if a continuation would develop uses substantially different from those already described.

The principle is well settled, and is specifically exemplified in cases such as the one involving the directors of the American Malt-
ing Company (65 N. J. Equity 375), that anticipated profits may not be made the basis of dividends payable in cash. In that case, quoting from the opinion written by Judge Clarke, "These contracts were to deliver at a future time a product not yet made from raw material, not yet purchased, with the aid of labor not yet expended. The price agreed to be paid at that future time had to cover all the possible contingencies of the market in the meanwhile, and might show a profit, and ran the chance of showing a loss. When the sales actually took place they were entered in the books. But to calculate months in advance on the results of future transactions, and on such calculations to declare dividends, was to base such dividends on paper profits—hoped for profits, future profits—and not upon the surplus or net profits required by law. It does not seem to me that you can 'divide,' that is, make a dividend of a hope based on an expectation of a future delivery at a favorable price of what is not yet in existence, under the statute."

The principle is generally accepted, and is supported by *Jennery v. Olmstead* (36 Hun 536), that a rise in market prices over the cost of commodities carried as current assets does not justify a credit to

profit and loss, or an increase in earned surplus. In the case of *Jennery v. Olmstead*, the court had to pass on the question of whether an increase in the market value of United States bonds, than which nothing could be more marketable, was a proper credit to profit and loss. The court held that it was not.

In further support of the principle that unrealized increment does not constitute a profit distributable in the form of cash dividends, might be cited *Marks v. Monroe County Permanent Savings and Loan Association* (52 N. Y. St. Rep. 451, 22 N. Y. Supp. 589), in which it was held that unearned discount was not so distributable.

The statutes of Ohio (General Corporation Law of 1927, Section 8623-38) require that "Cash dividends shall not be paid out of surplus due to or arising from (a) unrealized appreciation in value of or a revaluation of fixed assets * * *."

In the outstanding case of *Eisner v. Macomber* (252 U. S. 189) the United States Supreme Court held that in order to be subject to taxation, income must be shown to have been "derived" from capital, and not merely a "growth or increment of value in the investment." * * * "Enrichment through increase in value of capital investment is not income in any proper meaning of the term." This case, of course, will be remembered as the one in which stock dividends were declared by the Supreme Court to be non-taxable.

In another case which arose in connection with the Profits Tax Laws, the United States Supreme Court held in the case of *La Belle Iron Works v. United States* (256 U. S. 377) that appreciation could not be included in invested capital.

If contractual rights to receive in the future, amounts in excess of cost, or an opportunity to realize profit through resort to a ready market, do not warrant the recognition of increased asset value, it does not seem that any opinion expressed by, or in behalf of, the owner of property, can effectively increase the value of such property to the same owner.

The conclusion well may be reached, therefore, that an estimated increase in the value of assets, even if the estimated increase is recorded in the books of account of an enterprise, does not increase either actually, or constructively, the surplus available to that enterprise for distribution as cash dividends.

Exception to the foregoing conclusion possibly may be taken on the ground that it is not applicable in a case where one corporation

owns all, or a sufficient amount of the stock of another corporation to direct the application of surplus profits, and periodically revalues its investment in the stock of the subsidiary company. Such circumstances seem not to indicate an exception to the rule which excludes appreciation from earned surplus. Revaluation on the basis of net asset values of subsidiaries, where warranted by circumstances of control, is but another way of giving expression to a result which would be achieved by consolidating the accounts of two companies. That this procedure may result in an amount of surplus greater than that of the parent company alone, does not place the parent company in the position of having taken credit for unrealized appreciation.

The question may be raised, next, as to whether the procedure of increasing the book value of an asset, increases the capital account of an enterprise. The value of capital to an enterprise is determined by its earning power. Capital being but a collective term comprehending ownership of, or an equity in, the assets of an enterprise, the earning power inheres not in the capital account, but in the substance by which the capital is represented. To answer in the affirmative the question of whether increasing the book value of an asset increases capital, it must be shown that the asset which has been raised in value has increased earning power which justifies the value assigned to the asset.

Physical property in the form of buildings and equipment scarcely may be considered to be capable of producing any favorable effect on earnings. On the contrary, the older such property becomes, the greater, frequently, becomes the burden on earnings. Consequently, such property does not meet the test which justifies an increase in asset value and in capital.

Land, under certain circumstances of location and demand, may increase in value, but the increase is a theoretical one requiring an exchange in order to make it effectual. In the hands of the same owner and without improvement, usually it has no increased value in use.

Mineral deposits are analogous to land. Their value in use continues the same. Their value in exchange requires a transfer of ownership, before an increase in value may be recognized.

Values in ore bodies, or other natural resources, established by discovery and engineering appraisal, constitute an exception to the foregoing statement, in that they represent added wealth which finds

its rational place in capital, and is justified by increased value in use, with the consequent effect on earnings.

Nature, also, is responsible at times for increment which it seems must be recognized. Probably no one would maintain that the natural increase in timber, live-stock, or nursery-stock should be ignored in any attempt to portray, by means of accounting, conditions and operations of enterprises dealing in such resources. On the contrary, it seems but reasonable that the accretion should be admitted to a place in the inventory of assets, with the consequent effect, as the case may be, on capital, reserves for unrealized increment, or profits.

Coming finally to intangibles, it is apparent that some enterprises possessing rights under contracts which have been undervalued, or not previously valued, or having franchises, patents, trade-marks, copyrights, etc., acquired at nominal cost, may enjoy profits in excess of those which are normal for their particular line of business. Under such circumstances, it seems that the owner of such intangibles would be justified in attributing the excess profits to such assets, and in placing on them a value commensurate with their earning power. In cases where the increased earning power has been demonstrated to have continued over a reasonable period of time, and is sufficiently permanent to warrant it, it would not seem irrational to raise the book value of the asset and credit the amount of the increase to capital. The effect, incidentally, would be to adjust the future return on capital so that it would tend to conform to the rate assumed as the norm.

There are at times circumstances involving land which create a situation analogous to that in which the capitalization of intangibles is warranted. Where capital, represented by land at cost returns a profit substantially and continuously in excess of normal, it does not seem illogical to increase the land value and the capital so that the future percentage of return on the increased amount of capital will approximate a normal rate of return. This is not on the theory that the value of surrounding lands has increased and created a possibility of sale at a profit, but that the owner, by reason of the increased earning power conferred on him by a fortunate purchase, is entitled to capitalize that increased earning power. Thus, it seems that the situation becomes analogous to that involving intangibles.

The preceding discussion of appreciation in its relation to capital seems to warrant the conclusion that an increase in the book value

of an asset does not justify an increase in capital account unless the asset has increased value in use. Increased value in exchange does not constitute grounds for increasing capital.

Common law and specific statutes, in some jurisdictions, may deter those charged with the direction of corporate enterprises from paying cash dividends out of anticipated profits, or estimated surplus. There is little, if any, regulation, however, outside of that employed by the Interstate Commerce Commission and the various public service commissions, over the bookkeeping of corporations.

If a corporation desires to give expression to a theoretical increase in value of property, there is little an auditor can do to prevent such practice, except to inform himself thoroughly on the subject and exercise his logic and moral suasion in the premises. He can and should, however, refuse to certify to a statement in which the expression of increased value results in a misleading representation with regard to surplus, or to capital.

Justification of the practice of recognizing appreciation is attempted at times on the ground that the increase in value will be recovered out of future earnings through increased charges for depreciation.

This theory is fallacious, in that if the proportionate credit, representing a decline in unrealized appreciation, is properly applied, that is, as an offset to the depreciation charge, the net result will be the same as if depreciation had been taken on the property value before it was increased.

The effect of charging an increased amount of depreciation is to show the realization of a fictitious profit on property at the expense of future income. The result is doubly misleading. Net income from operations has not, in fact, been reduced; neither has a profit been realized through disposal of the property.

This argument is in no sense a criticism of the practice now prevalent of having property appraised by qualified appraisers. For purposes of insurance, appraisal is a proper procedure. For purposes of negotiation incident to a sale of property, or recapitalization involving the entry of new money into an enterprise, appraisal is pertinent and logical. For the purpose of creating a surplus to be distributed to shareholders in the form of cash dividends, appraisal is impertinent and unsound. If an appraisal *relating to property which is subject to depreciation*, is used to create a surplus which will be apportioned by means of a stock dividend, the procedure is not only

unsound in that it erroneously assumes an increase in capital, but it is misleading in that it conceals the burden which is placed on future earnings through the increased depreciation charges which must follow.

The contention sometimes is made that the cost of replacing property having increased because of a rise in the general level of prices, property values should be marked up in order to protect invested capital against a sudden and unexpected charge in the event of severe property loss. Such procedure, being accompanied by an increase in the periodic charge for depreciation, has the advantage, it is claimed, of providing for the extinguishment of the property on the basis of replacement cost while protecting the original capital against impairment in case of extraordinary loss.

The fallacy in this theory, as it relates to capital, is that the property value will be extinguished with equal certainty on the basis of original cost and the corresponding periodic charge for depreciation, and capital will not become impaired. Depreciating property on the replacement basis is tantamount to anticipating an increase in surplus or in capital and attempting to make good the realization of the increase out of future earnings.

Directors who fear extraordinary property losses should arrange for insurance on the basis of replacement cost as long as such cost is above original cost. If directors consider it desirable to provide a reserve against extraordinary property losses, they should create it through a special charge against surplus, rather than misstate the net profits by excessive charges for depreciation.

If a corporation decides to increase its capital by means of an appraisal of property, perhaps no preventive can be imposed. Such steps should be taken, however, with the knowledge that if the property is of a depreciating character, the increased depreciation charge will result in decreased future net earnings in an amount equal to the depreciation on the appreciation. This effect is one especially worthy of consideration in its effect as between present and future shareholders. Those who buy shares, the capitalized value of which in part is based on appreciation of depreciating property, must expect to suffer the consequences of reduced future profits, and perhaps reduced dividends.

The power to prevent a corporation from writing up the value of its property, where prevention is desirable, obviously, is beyond the

control of the accountant. But the right is his to determine the kind of financial statements to which he will attach his certification. It is his duty to refrain from certifying to financial statements which are misleading. Applying this formula, consideration may be given to the various treatments of appreciation in an attempt to discover what constitutes a misleading statement.

Property clearly described on the asset side of a balance sheet as being carried at appraised value should mislead no one. Intangibles so described should be equally clear. Earned surplus which contains an undisclosed element of appreciation is misleading, and the inclusion of appreciation under the general caption of surplus is a misrepresentation.

While it may seem sufficient in giving effect to appreciation to differentiate it from any earned surplus by showing it as "capital surplus," or "surplus arising from appreciation," all the reasoning heretofore applied seems to lead to the conclusion that appreciation does not, in fact, give rise to surplus of any kind. Under such circumstances, it appears that the credit for appreciation may not be described in any way on the balance sheet as surplus, without danger of misleading the reader.

Almost equally dangerous is the practice of including the credit for appreciation in the capital account, without disclosing the fact, in cases where corporations have shares of no par value. The implication exists, where such stock is involved, and there is no question of stated share value, that the capital account represents the amount of consideration received for the stock, plus such amounts as the directors have authorized to be transferred from surplus thereto. The inference may be drawn, therefore, that such capital is based on closed transactions, and is not dependent in any part upon future earnings for its establishment.

No one should be misled with respect to the credit for appreciation, in its relation to capital and surplus, if an amount equal to the estimated appreciation is placed in an account by itself, stated on the balance sheet in a separate caption above the capital stock, and appropriately described. A descriptive title which would be universally acceptable is difficult to find. Judging the matter from the standpoint of what must transpire if effect is to be given to appreciation, and it is to be treated correctly in its relation to the asset, to capital, to depreciation, to earnings, and to surplus, the element seems to

stand out clearly as an estimated increase in value which has not been established by realization, or by earnings. Consequently, it may be described accurately as "Unrealized appreciation" or "Unearned appreciation."

The conclusions reached with respect to appreciation are as follows:

1. The recognition of appreciation in accounts generally is unsound from the point of view of economics.*

✓ 2. Appreciation does not increase capital, except in cases of newly discovered value, and of increased intangible or other asset values which are supported by indisputable earning power.

3. Appreciation should not be recognized unless it is justified by newly discovered value, or by increased value in use. Value in exchange does not justify its recognition.

4. Appreciation is not recognized by the profit economy, which requires that there shall have been a closed transaction before gain or loss may be determined.

5. The recognition in accounts of appreciation as creating a realized and distributable asset value is contrary to common law, and to some statutory law.

6. Profits, ascribed to appreciation, are excluded from income which is subject to Federal taxation.

7. Appreciation does not give rise to surplus which may be distributed in the form of cash dividends.

8. Appreciation does not give rise to earned surplus.

✓ 9. Appreciation may not be shown as having given rise to surplus of any character, without danger of being misleading.

10. Appreciation should not be given effect in a balance sheet, except as an estimate of unrealized value, in the nature of a reserve which may be shown either on the side of the liabilities or as a deduction from the corresponding asset. If shown on the side of the liabilities, it should appear above the capital section of the balance sheet, and in any event should be described as "Unrealized appreciation," "Unearned appreciation," or by means of some caption equally clear and accurate.

11. The theory that appreciation may be recovered out of earnings by increasing the charge for depreciation is erroneous.

*A study of the subject of "Appreciation" by graduate students under Professor A. C. Littleton, in the College of Commerce and Business Administration, University of Illinois.

12. The amount corresponding to depreciation of appreciation periodically deducted from unrealized or unearned appreciation, in cases where effect has been given to appreciation, should be applied as an offset in reduction of the charge for depreciation, so that the effect on net profits will be the same as if the charge for depreciation had been based on the value of the property prior to the introduction of appreciation. Stating differently, depreciation of appreciation should be charged against "Unrealized appreciation."

REVIEWS

Principles of Accounting, Revised Edition, Vols. I and II, by H. A. FINNEY.
Prentice-Hall, Inc., New York. 1928.

According to the preface, the revised edition of this well-known text is published in response to teachers' requests for new problem material. The first edition appeared about four years ago. It was reviewed in the December, 1925, number of the Publications of The American Association of University Instructors in Accounting—the publication which immediately preceded the founding of *The Accounting Review*. Few changes have been made in the text proper and none in the sequence of subjects. Extended discussion of the new edition, therefore, is unnecessary.

The two volumes are offered as text material for a two-year course in advanced accounting, a previous knowledge of the elementary principles of the subject being assumed. Each volume contains thirty chapters. Experience has demonstrated that the material can be covered satisfactorily in one year, although in a year course there is time for solution of only about two out of every five problems.

The problems and questions accompanying each chapter are most valuable features of the text. Each chapter is followed, ordinarily, by five problems suitable for written exercises, and by from five to fifteen questions for discussion. In the five problem plan are included review problems which do not relate to the chapters that they follow. This arrangement is subject to criticism. For convenience in use these problems might well be relegated to a section devoted to problems for review, or, at least, marked as review material where they stand. Many of the problems are characteristic of C. P. A. examinations, which, no doubt, is an advantage, although the information provided for the solution of such problems is sometimes rather indefinite and incomplete. Detailed solutions of the problems given are available for the use of the teacher.

The present edition contains some problems which are like cases in that they involve the consideration of a number of phases of the subject and call for the presentation of a report as contrasted with the solution of a problem. More cases on which rather extended reports may be prepared would be a desirable addition to the teaching material of an advanced course such as this book contemplates.

As a matter of bookmaking, the numbering of pages by chapter and page of chapter has been criticised. The present reviewer, however, finds this arrangement in such a book an advantage over the usual method of numbering pages.

"Principles of Accounting" is characterized by logical arrangement, clarity of statement and exhaustive discussion and illustration of subject matter. Legal relationships and managerial policies involved are discussed where

they have a direct bearing on accounting procedure. During the past four years this book has won a commendable position in the field as a "textbook in advanced accounting and a reference book for accountants."

CHARLES A. GLOVER

Brown University

Practical Accounting, by SPURGEON BELL. American Technical Society. 1927. 302 pp.

The twenty chapters of this book constitute a brief but clear presentation of the principles of accounting. From the outset, illustrations are used to show all the detail which the practical bookkeeper enters in his records. Although it is elementary in scope, yet among the more advanced chapters are such titles as Interpretation and Managerial Use of the Profit and Loss Statement, Construction and Managerial Use of the Balance Sheet, Changing from Single Proprietorship to Partnership Accounting, Controlling Accounts and Columnar Journals, Control over Consignments, Formation and Dissolution of a Partnership, Apportionment of Profit and Loss, and Liquidation of a Solvent Partnership.

The book does not discuss the accounts peculiar to corporations and contains no problem material for class use. Although it is too brief for the usual collegiate courses in accounting, this book has a place as a text in short courses and for home study or reference use. It is well bound and is printed in a large bold type which adds to its attractiveness.

CHARLES A. GLOVER

Brown University

Essentials of Cost Accounting, by L. CLEVELAND AMIDON and THEODORE LANG. The Ronald Press Company, New York, 1928. x, 383 pp.

In one respect at least this book is unique among recent college accounting texts; it makes no claims to virtue as an exponent of executive policies or managerial uses. On the contrary, the preface declares, with refreshing frankness, that the book is concerned only with "the art and technique of cost accounting," and that a clear line has been drawn between this and managerial uses of costs. A reading of the twenty-one chapters which follow indicates that the authors have stuck to their plan and have made no attempt at discussing the various applications of the information which they show how to compile. What the authors have attempted is, however, worked out with considerable clarity; in particular the general features are developed with a marked degree of coherence, and with an abundance of illustration, not only of the customary forms, but of typical problems fully worked out and interposed between the narrative chapters. Indeed, the authors claim to have aimed especially at a clear and simple presentation, and in this they have largely succeeded; if there is any weakness at all in this direction it is not through fault of the general plan, but in occasional details of exposition. The title of Chapter IX, "Actual Costs

of Manufacturing Expense" for example, is not particularly happy, and during the chapter the discussion relates in one place to *all* manufacturing costs, including material, labor and burden, whereas the greater part of the chapter deals with the actual overhead, as contrasted with the estimated overhead and its application to the product by means of burden rates, which are dealt with in the succeeding chapter.

All teachers are familiar with the dilemma of choosing between a wealth of explanation and illustration reaching to the point of confusion, and simplification by abbreviation which may, if carried too far, leave the student equally uncomprehending. If the present authors have erred at all, it is in the latter direction; but this observation is intended only in the relative sense that none of us are perfect and all must experiment for the most satisfactory results. The general theme of this book does progress by even, regular and easy steps, which are likely to make it extremely helpful to the beginning student.

There is little of the unusual about the plan unless it be the careful way in which, at the beginning, it is linked up with general accounting by a series of illustrated chapters in which operations are recorded first in the general accounts only, and secondly in the cost accounts. This part of the work is well developed and the student is likely to feel, as is intended, that there is no great gulf between general and cost accounting. The diagrammatic statement, in Chapter 4, of the contents of the more typical cost accounts is very helpful. Then follow chapters on factory orders and on materials, labor, burden, the factory ledger, and statements. A balanced treatment is given to job costs and process costs by devoting two well-illustrated chapters to the latter, and by providing a set involving job costs to be worked out by the students. In addition to this set a series of problems are provided as exercise material, some of them drawn from the American Institute examinations or from those of State Boards; a few review questions are appended to each chapter. Following the chapters dealing with what might be called the complete cost accounting cycle, there are chapters on estimated costs, standard costs, waste and spoilage, and by-products and joint product.

The authors are to be congratulated on thus frankly attacking the problem of the development of proper cost records, a task by no means simple, and one which is here treated in a way which should be intelligible to students, and of interest to business executives, who, though it is not primarily aimed at them, should be able to see in it many matters suitable for application in their business.

T. H. SANDERS

Harvard Graduate, School of Business Administration

The Principles of Factory Organization and Management, by RALPH C. DAVIS. Harper & Brothers, New York, 1928. 449 pp.

The author, formerly a member of the faculty of Ohio State University and at present Head of the Department of Management of the General

Motors Institute of Technology, announces that he has written this volume primarily for the student of industrial management and "the junior executive who aspires to greater responsibility." The book is comprehensive in scope, covering the following aspects of the field: plant location, design, construction, layout, lighting, heating and ventilation; organization types and functions; system and its relation to management; production and quality control; time and motion study; maintenance; store control and purchasing; simplification and standardization; personnel organization and work; office management and cost control. The book is liberally illustrated with 133 diagrams and 29 plates.

This is one of the best books on factory management that has come to your reviewer's attention. There is evidence throughout that the author has a sense of relative values—pet hobbies of organization time study, standardization or what not are not unduly emphasized. The illustrations and examples are well chosen and pertinent. It is a well balanced and ably written book.

A. H. WILLIAMS

Wharton School of Finance and Commerce

Corporation Secretary's Guide, by WILLIAM H. CROW. Prentice-Hall Inc., New York, 1927. xx, 764 pp.

This is a reference book which this office finds very useful and which, I believe, should be in the office of every corporation's secretary, as it covers in a most thorough manner all matters pertaining to the office. Before this book was published, the author corresponded with the secretaries of the leading corporations and obtained from them first-hand information in connection with the conduct of their particular offices, and there appear in the book many illustrations of forms used by these officials. The indexing is very comprehensive and carefully prepared. The arrangement is in the proper sequence and information is given on practically every question.

In as complete a work as this, there will of course be many subjects which will not be of interest to all users of this book. For example: Procedure in connection with the handling of stock certificates which in the large corporations is now done by banks as transfer agents and registrars. Many legal matters in connection with the office are explained and specimen votes of Stockholders and Board of Directors are given, which in the case again of large corporations are usually left to the corporation counsel. However, all such matters are fully covered and in the case of secretaries of small corporations in isolated sections the book in this respect should be very valuable. I can heartily recommend the book as extremely useful and something which should be referred to often.

HIRAM C. HOYT

Gorham Manufacturing Company

Accounting Method, by C. RUFUS ROREM. The University of Chicago Press, Chicago, 1928. xvii, 596 pp.

This book "has been used at the University of Chicago for two years as the basis for the introductory course in accounting. It is designed especially for students of sophomore or senior-college rank."

The treatment is divided into four main sections as follows:

Part I. The Rôle of Accounting in Modern Economic Life.

Part II. Double Entry Accounting.

Part III. Accounting Valuation.

Part IV. Interpretation of Accounting Data.

Part I is rather slight, consisting of about thirteen pages. Incidentally, the last chapter in the book, "Social Control Through Accounts," would seem to belong here. Part II is subdivided into three sections, as follows:

A. Theory of Double Entry Accounting.

B. General Classifying Devices and Summaries.

C. Special Classifying Devices.

In this part the author begins, as usual, with a consideration of the balance sheet equation, adhering to the view that liabilities and proprietorship are essentially related in that both elements express "property rights." The skeleton account is then introduced, with a statement of the general use of debit and credit in terms of effects upon fundamental balance sheet elements. In taking up the difficult subject of "income and expense" accounts in Chapter V the device of the simple personal service enterprise (emphasized earlier by C. D. Lazenby in his "Basic Bookkeeping") is resorted to, in order to eliminate the problem of inventories and expenses. In bringing expense charges into the picture Professor Rorem falls into the familiar inaccuracy of describing revenues as increases in proprietorship or capital and expenses as deductions from capital. Such conceptions, of course, make no provision for the distinction between expenses, and losses, or other charges to proprietorship, and afford no basis for the recognition later of the distinction between operating net, and net to a particular class of investors, for example, the common stockholders. In this connection attention may be called to the fact that the use of a single "income and expense" account to summarize all income sheet data in the ledger is little if any improvement over the more familiar indiscriminate caption, "profit and loss." What is needed is at least two ledger summaries, the operating account showing expenses and revenue and the operating net, and the income account, covering the adjustment and apportionment of net income. In particular it is questionable usage to label gross sales of merchandise "income."

In Chapters IX, X, and XIII, "Typical Income and Expense Accounts", "Periodic Adjustment and Summarization", and "The Statement of Income and Expense", one finds the expected outgrowth of the incomplete analysis of revenue and income elements just referred to. Thus "merchandise purchases" is treated as a typical expense account. There is no distinction between labor cost incurred and labor cost of sales, and in general through-

out the discussion there is no recognition of the fact that expense is the cost of materials and services attaching to the sales or other gross revenue of the particular period and is in no proper sense represented either by purchases of such elements or even by the amount converted or utilized in production. To put the reviewer's objection to these chapters in another way, Professor Rorem here adopts almost exclusively the point of view of the merchant or trader whose business consists simply in buying and selling goods, and who is inclined (erroneously in many cases, without doubt) to treat all costs incurred other than the bare merchandise cost of unsold goods as charges to the sales of the current period. The adherence to this point of view is one of the most serious weaknesses in our accounting texts, and it would be refreshing to find a treatment which deliberately abandoned it. The industrial enterprise, with its obvious problems of cost accounting, has for some time assumed the position of first importance to the accountant, and the conceptions of accounting for operations, inventories in the sense of deferred charges of materials, labor, and assigned overhead, and classified cost of sales built up through a system of tracing relationships between particular cost elements and particular revenues—for some time commonplaces in manufacturing—now bid fair to become controlling considerations in accounting in the mercantile field, particularly in the large, progressive establishments. There is no intention to suggest that the student beginning his study of the subject should have immediately thrust upon him the intricacies of the internal accounting of the large industrial concern. It is believed, however, that the fundamental conceptions of expense and revenue accounting as it is being developed in our foremost manufacturing and commercial concerns should be given due weight in the explanation of this phase of the accounting system. The student should be made to understand, for example, that labor cost is on essentially the same footing as material cost; one is no more an expense when the cost is incurred than the other. Expense is simply that segment of labor and material cost carved out by the accountant as applicable to the revenue of the particular period.

It should be noted that in Chapter XX and elsewhere Professor Rorem touches upon the points of view which the reviewer is trying to emphasize, but it would have been much better to have recognized these considerations in a clear-cut fashion early in the discussion of "income and expense."

Subdivision C of Part II is in the main very satisfactory. A minor objection is the inclusion in this section of such chapters as XVIII, "Special Accounts for Partners' Proprietorship" and XIX, "Special Accounts for Corporate Proprietorship." This is an illustration of the general over-organization, and resulting improper organization at a number of points, of the material of the book. Submerging an outline of the important subject of corporate accounting—capital stock, bonds, dividends, etc.—under the subdivision "Special Classifying Devices" which is in turn a part of Part II, "Double Entry Accounting", results in an unduly brief and somewhat unsatisfactory treatment.

The author's treatment of valuation for accounting purposes in Part III is one of the best sections of the book. The discussion of many topics is rather brief, particularly in the matter of technical details and explanations. But the treatment is on the whole discriminating and well balanced and evidences an appreciation of the importance of the problems of valuation to the accountant—something which seems to be quite lacking in the case of many instructors in the field. Some teachers may feel that it would be better to postpone consideration of some of the topics raised until a more convenient season than the introductory course, but the reviewer sympathizes with the view that it is advisable to include at least an outline of the problems of valuation in the work of the first year. In this section there is again a question with respect to organization and emphasis. Chapters XXIX and XXX, "Valuation of Partners' Proprietorship" and "Valuation of Corporate Proprietorship" might well be tied up with chapters XVIII and XIX under a special section. After all, the valuation of proprietorship is not an independent problem, but is a derivative of the whole process of valuing assets, particularly as this process focuses in income determination.

Part IV covering account classification, statements, ratios, etc., is distinctly worth while. Most texts contain far too little material on these topics. Chapter XXXIX, "Administrative Uses of Cost Data", is especially good. Among the many points deserving commendation in this chapter is the statement on page 504, "Costs (of the particular enterprise) do not determine (its specific) selling prices; they merely form the basis for estimating normal or satisfactory selling prices over periods of time"—the words in parentheses being added by the reviewer.

Passing judgment on this book as a whole one may say that its chief merits lie in the author's emphasis throughout on accounting as a method of classifying and measuring business data for the purpose of various forms of control and in the marked attention paid to the process of valuation and other phases of the more analytical side of the subject. In these respects the book is quite in contrast to those treatments which confine their attention almost entirely to the details of the bookkeeping process, and the comparison is in general decidedly favorable to the present book. Undoubtedly Professor Rorem's text is one of the most readable and generally satisfactory of the crop of books in this field which have been coming out in recent years.

W. A. PATON

University of Michigan

Principles of Valuation, by J. A. GRIMES and W. H. CRAIGUE. Prentice-Hall Inc., New York, 1928. 274 pp.

This book by two valuation engineers of the U. S. Treasury Department is indeed a contribution to the subject of valuation of divers types of income. It compares several well-known methods of valuation which employ a single rate of interest in establishing present worth; it presents a

treatment of the Hoskold and Morkill types of sinking fund methods employing two interest rates and it introduces a new sinking fund method involving a triple interest rate. These different methods of valuation, satisfying Federal and State income tax law requirements, are evolved in a clear-cut manner by a sequence consisting of the statement of premises, the expression of these premises in algebraic form, and the application of the formulas to a concrete example. The formulas are adaptable to the valuation of income of any type including irregular, fluctuating, and deferred incomes. The methods permit of ready comparison, each of them being illustrated by application to a numerical example placed conveniently at the beginning of the book, the tabulation of income allocation contributing to the exposition of the method.

The premises are given division numbers, the premises of the first three requiring one interest rate, those of divisions four and five requiring two interest rates, and those of the last division requiring three interest rates. The premises of the last four divisions are sinking fund premises and it is shown that the formulas developed are but special cases of the new formula introduced by the authors in the last division by the simple process of equating several of the interest rates, namely, the speculative rate of interest to be earned by the investment, the safe rate to be earned by the sinking fund and the semi-speculative rate to be paid to the investor upon the amount accumulated in the sinking fund.

We find a chapter devoted to the derivation of formulas for the valuation of the more common types of income, showing them as derived from general formulas developed before, differing from them only in the time distribution of income. Solutions of these formulas for the time required for stipulated income to return a stated value are offered for each type of income and for each of the six sets of premises. Perpetual income formulas are given wherever the type of income may be valued in perpetuity. Again it may be said that there is no lack of arithmetical solutions and of income allocation tabulation. The adaptation of the general formulas developed early in the book to the valuation of income subject to an income tax and arithmetical illustrations for such valuation comprise another chapter.

The discussion of interest rates is accorded a chapter and is accompanied by numerous charts showing approximate annual rates of interest, a comparison of index figures for rates of interest and wholesale commodity prices and average annual yields of governmental securities. These charts are supplemented by complete statistics to be found elsewhere in the book.

The discount for hazard method of valuation is given considerable attention and formulas for the computation of factors of safety are submitted together with charts showing factors of safety for speculative rates of interest to 20% and for terms of investment from one to fifty years on the basis of different safe rates of interest. These charts add greatly to the practical value of the book, as do the approximately one hundred pages

which are replete with statistics of interest rates and valuation tables for percentages from 3% to 100%.

The comprehensive treatment of the methods of valuation of income of all types, especially those subject to tax, recommends the book as a reference work in this field. The mathematics involved is of a simple nature and the several methods of summation used in deriving formulas are stated early in the book. Especially noteworthy is the generality of the new formula for the valuation of any type of income.

J. HOBART BUSHEY

University of Michigan

Ratio Analysis of Financial Statements, by ALEXANDER WALL AND R. W. DUNING. Harper and Bros., New York. 349 pp. \$4.00.

Accounting instructors have for years recognized the pioneering work of Alexander Wall in the field of ratio analysis of financial statements. His "Analytical Credits" in 1921 indicated that he was already in the field of analyzing statements, and that the business world might expect something more definite and conclusive at a later date. It seems to the reviewer that "Ratio Analysis of Financial Statements" brings this study up to 1928, and in a most satisfactory manner, too! The authors are Alexander Wall, Secretary-Treasurer, and Raymond W. Duning, Assistant Secretary, of the Robert Morris Associates, a national organization of bank credit executives.

The book is divided into two general parts. The first 185 pages consists of twelve chapters in which various points relative to the title of the book are discussed. The second part of the book, called the Appendix, contains eleven statement analyses in which the methods advocated by the authors in the preceding chapters are illustrated. In the words of the authors "these few examples have been selected . . . because each seems to show to good advantage some phase of this more complete analysis."

The first chapter, "Theory and Practice of Banking Credits," analyzes and discusses the general factors governing a credit decision. The authors evaluate or assign the following weights to the three factors in a credit decision: personal element, 40%; financial element, 40%; cyclical or general business condition element, 20%.

Chapters II and III contain an explanation and discussion of statement nomenclature relative to assets and liabilities. In these chapters the authors have, for the most part, followed the balance sheet form recommended in the pamphlet issued by the Federal Reserve Board, "Approved Methods for the Preparation of Balance Sheet Statements." It will be recalled in this bulletin that the fixed asset reserves and the receivable reserves are deducted directly from the corresponding assets, yet in the chapters under discussion, reserves are included in a general group which is placed in the statements between Total Debt (Liabilities) and Net Worth. Goodwill, patents, trade marks, treasury stock, and bond discounts are "deducted from total of statement and net worth."

Chapter IV, "The Profit and Loss Statement, The Budget, and Reserves," contains a particularly interesting discussion relative to the way in which

the analyst should handle reserves in the computation of ratios. Three methods are discussed, as follows:

- "1. Fixed assets gross and depreciation reserves added to net worth.
2. Fixed assets gross and depreciation reserves disregarded.
3. Fixed assets net of depreciation reserves."

If the reviewer correctly interprets the statements made, the authors favor the third method mentioned above. However, still another treatment of reserves is given in the latter part of this chapter which confuses the situation. There are some rather positive statements made in connection with this fourth method which seem to be borne out in the various analyses given in the Appendix. To quote from pages 80 and 81, "Therefore, it is suggested that the better way to handle this item for purely analytical credit purposes is to carry the cost of machinery gross as an asset and accumulate a reserve account on the liability side of the statement. This item should be below the total debt and above the net worth.

"With this set-up one can easily note, and not easily overlook, the relationship between net worth and cost of fixed assets, which, after all, measures the capital strain made by fixed asset investment or replacement.

"In our statement studies all ratios are computed without reference to reserves for depreciation. These represent no present value and so cannot be left in the net worth. Cumulatively they represent the approach of capital needs to buy replacements. Therefore they should not be subtracted from fixed assets in credit analysis, although proper to establish liquidating values. On this basis net worth is compared to the capital invested or to be invested in fixed assets or replacements."

Chapter V treats "Comparative Analysis" and Chapter VI discusses "Common-Size Statements." The common-size statement "gets its name from the fact that the total footings of any statement are considered equal to 100%."

Chapter VII treats the four static ratios: current, worth to debt, worth to fixed assets, merchandise to receivables. Chapter VIII treats the four dynamic ratios: sales to receivables, sales to merchandise, sales to fixed assets, sales to net worth. In Chapter IX certain ratios supplementary to those already discussed are mentioned and illustrated. Even here the authors have not, in my judgment, gone to extremes and mentioned a lot of almost useless, if not totally unnecessary ratios which were so condemned by Professor Paton in his classic address before the Washington Convention of the Accounting Instructors last year. (If time had permitted, I would have asked Professor Adams to have Paton review this book because I am almost certain Paton would agree to the sanity and reasonableness of the ratios advocated.)

Chapter X contains a very interesting and important constructive suggestion relative to "Indexing Credit Strength." It attempts to develop an index for this purpose, and discusses the use of certain formulae which are explained. Chapter XI deals with the "Bases for Ratio Analysis" and discusses certain fundamental statistical terms. Chapter XII consists of a summary of the preceding chapters.

All in all, "Ratio Analysis of Financial Statements" should prove decidedly interesting and valuable to every accounting instructor, and particularly to those instructors also engaged in practice. The hope is expressed that some

means or methods may be found for the accepted accounting terms and classifications to be adopted by all those interested in analyzing balance sheets. Is this not an excellent illustration of where the bank credit man, the practicing accountant, and the accounting instructor might profitably get together to the end that uniform treatment of accounts might be insured?

F. H. ELWELL

University of Wisconsin

Bank Loans on Statement and Character, by MAHLON D. MILLER. The Ronald Press Co., New York. 492 pp.

This is a book which might well be looked upon as practically indispensable for the man who is guiding the destinies of the small or medium-sized business enterprise and also to the certified public accountant who is responsible for the form and content of financial statements presented to banks as the basis for credit. For the junior banker engaged in credit work it constitutes the best hand-book which has come to this reviewer's attention.

The author discusses the various channels through which the banker acquires information concerning the financial standing and reliability of applicants for credit and quite properly emphasis is laid upon the financial statement. The way the good banker looks at each item on the balance sheet, the questions which naturally arise in his mind (p. 192), how the answers to these questions can be supplied on a well-constructed statement—all this is set forth clearly and in great detail. In the last chapter the author has supplied a large number of actual statements in comparative form and throughout the book frequent references are made to items on these statements to illustrate his points.

The analysis of the borrower's current assets and current liabilities and the discussion concerning the questions raised in connection with each item are both exhaustive and illuminating. Over and over again the author emphasizes the importance of making clear the meaning of small and unusual items. This is a lesson which should be taken to heart by the accountant and the junior analyst in the bank credit department because an item which is small and possibly unimportant in itself may nevertheless furnish a clue to the banker as to some general policy of the subject firm.

The book treats exhaustively not only of the current position but also of fixed assets and their valuation and relative size. There is also a good discussion of long-term liabilities and capital. In this latter section, in analyzing reserves which represent appropriated Surplus (p. 242) there is one omission to which attention should be called. When a Reserve representing appropriated Surplus appears on a statement the public accountant should ascertain whether or not any contracts or other commitments involving any portion of this Surplus have been entered into which will necessitate expenditures during the succeeding twelve months. If any such commitments have been made the amount should appear among the current liabilities; if there have been no commitments that fact should likewise be stated. The banker is not justified in assuming, in the absence of definite information on the point, that a Reserve, let us say, for Additions and Betterments, contains no current liabilities.

One chapter is devoted to the analysis of comparative statements and includes a discussion and evaluation of various well-known ratios. The importance of statements of application of funds is emphasized and an illustrative case is worked out in detail. There is also a good chapter on Profit and Loss Statements. The form of the statement is discussed at some length and each individual item is taken up separately. The importance to the lending banker of comparative operating statements is emphasized, and on page 306 the accountant is urged to set up the statement in such form as will leave no doubt about the amount of profit being currently made. This is a point which might have been dwelt on still further. Irrespective of everything else the concern which is making good profits currently will in all likelihood be able to meet its short time obligations. On the other hand, a downward trend of earning is always unsatisfactory and when this condition appears it must be offset by a balance sheet position better than would be required otherwise.

In the chapter on Planning for Business Control the importance of budgets and charts is well brought out and many good illustrations are supplied. On page 327 our attention is again called to the important fundamental that with sound budgeting "costs can be used for purposes of control rather than as historical information." The author does well also to warn against the widespread feeling "that if only sales can be made all else, including financing, will somehow take care of itself."

The least satisfactory chapter is the one devoted to Determining the Borrowing Limit on Unsecured Loans. Various pertinent considerations are brought forward and discussed but just how the borrowing limit might actually be determined in even one specific case is not set forth. The importance of periodic liquidation is properly emphasized and it is pointed out that in a seasonal business the proprietors should supply sufficient capital to meet all the requirements in the off-season. But on page 286 the author quotes from a Chicago banker who very truly states that in some businesses "trade is steady throughout the year. . . . The packers cannot have a complete liquidation, nor can the distributors of any food product or other commodities where the consumption is continuous." The author makes no comment on this statement and in the very next paragraph goes on to say: "The well-managed, well-financed business limits its borrowing in this way and liquidates its loans annually." Does the author disagree with the Chicago bank president whom he quotes? And if not how might the limits for such borrowing be determined? Even in this chapter, however, there is much shrewd observation. For example, on page 279 we find this: "Out of every 100 new companies wanting accommodations, there will be some that are deserving of the banker's confidence. The skill exercised by the banker in choosing the right ones to support will reflect in a large measure the progress of that banker and his institution."

Throughout the book the author gives evidence of having had intimate personal contact with the problems discussed. It is a pleasure to recommend a book by one who so evidently speaks with authority.

R. G. RODKEY

University of Michigan

Principles of Auditing, by E. L. KOHLER and P. W. PETTENGILL. A. W. Shaw Co., Chicago, 1927. xi, 283 pp., and 100 pages of forms.

Just as an internship seems to be considered most desirable if not absolutely necessary in the training of a physician or surgeon, so practical experience in auditing or other professional accounting engagements seems necessary in training for a professional accountant for some of the duties one is expected to perform in that capacity. Auditing seems to be the generally accepted title for a book or course of study dealing with the application of theory of accounting by the professional accounting. Applications of principles and the development of procedures might be learned from text books in a fairly satisfactory manner, however, if the student or prospective accountant has a highly developed imagination that can derive the greatest benefit from the printed page in matters that deal with procedures and application of principles.

The young civil engineer on graduating from college is probably so well grounded in mathematics and theory of construction that he could design a steel bridge with proper attention to stresses and strains, but he would doubtless fall far short of the requirements for actual procedure in supervising the construction of an important bridge without first being exposed to some practical application of the principles and procedures in such construction.

Books such as *Principles of Auditing* by Kohler and Pettengill supply to the student of accounting and auditing, when properly taught, the nearest approach to a substitute for professional experience which has been presented in a single volume. The 100 pages of facsimile working papers, schedules, exhibits and audit comments, serve as the nearest substitute for experience that has as yet come to our attention. Through the use of the working papers, if the student is properly guided, he can visualize that phase of the work of the professional accountant which it is most difficult to comprehend through the use of one's imagination, aside from the use of good judgment, tact and similar natural qualities.

Aside from the working papers, which by the way, are unfortunately of such a composition as to effect eye-strain, the other general feature of the book which attracts the attention of a teacher of auditing is the viewpoint throughout that a student of auditing is already grounded in the theory of accounts and that his greatest need is a consideration of the procedure in auditing. The procedure is concisely stated in excellent English in 222 pages of text material while 255 questions on auditing afford an opportunity for one to test one's knowledge of the subject. The revised edition contains two chapters not included in the earlier edition. One of these is on The Detailed Audit and the other on Credit Investigations. It is interesting to note that while in the first edition the brief auditor's certificate contained the phrase "we hereby certify that in our opinion," the later edition, forming the basis of this review, used the expression "We believe." The space devoted to the verification and valuation of inventories seems to be rather brief considering the importance of this phase of an audit in the minds of many accountants of this country. The authors recognize the importance in these words: "The verification of an inventory is the most difficult of any of the assets and one of the most important."

Throughout the book the authors aim to keep before the reader the requirements of the Federal Income Tax Act and its possible effect on the viewpoint of the auditor. Several sets of practical auditing problems are available in separate binding for use with the main book if desired.

HIRAM T. SCOVILL

University of Illinois

Charts and Graphs, by KARL G. KARSTEN. Prentice-Hall, Inc., New York, 1925. xi, 734 pp.

Graphic presentation is a summary method of description. The appeal is to the eye of the reader. He is not asked to form a mental picture; the description is in pictorial form. The graphic method is adapted to show the non-mathetical relationship of officers and functions in a business organization and to show with approximate accuracy the mathematical correlation between two variables in time. With such range it is a tool to which all men may resort with profit on occasion.

This volume is a manual of great value to anyone who has occasion to build or read charts. It is written by a practitioner who states that "there can be as many different charting ways as there are different degrees of familiarity with charts." (p. 686.) This is the statement of a realist who knows that the only function of a chart is to tell a story and that the graphic method, like the vocabulary, must be adapted to the audience. And yet simplicity of method does not justify misrepresentation. Mr. Karsten points out the pitfalls that daily catch amateur chartists who seek the simple chart. (See, for example, ch. 8 and 10.)

The material of greatest interest to the accountant and economist will be found in Part II, Amount-of-Charge Analysis, and Part III, Rate-of-Charge Analysis. The more recently developed tools of graphic control represented by the Zee-Chart and the Gantt Progress Chart are briefly discussed here in chapters 22 and 23. The possible uses of the latter can hardly be enumerated. Wherever standard performance over a period of time can be established, the Gantt chart may be used as a check on actual performance. It is a form of chart with which every executive should be familiar.

Mr. Karsten presents his work with a pleasing modesty. He leans over backward in his tribute to an earlier general manual by Willard C. Brinton. He makes no pretense to exhaustive monographic treatment of any single field of graphics and in particular refers the reader to Wallace Clark, *The Gantt Charts*, for further detail. The book is written in an easy style. It is well and profusely illustrated and has been well indexed. It is a work which takes its place in even a highly selective library on economic or business subjects.

A. F. HINRICHS

Brown University

Problems in Finance, by CECIL EATON FRASER. A. W. Shaw Company, New York, 1927. xxi, 825 pp.

This volume of problems starts with an introductory note on the "case method" of teaching by Arthur Stone Dewing. He contends that there are

two essentially different aims of teaching. The first is that education seeks to recapitulate important accumulated facts. The second process consists in acquiring facility to act in the presence of new experience. Teaching people to think and teaching them acquired truths are linked as the future is based on the past. But in a world of change and in a field less subject to empirical testing than the natural sciences, the shift in emphasis is fundamental. "The cases in this book have been gathered and should be used with the clear consciousness that the purpose of business education is not to teach truths, . . . but to teach men to think in the presence of new situations. I trust there is not a single problem in this volume which is not capable of at least two intelligent solutions and I should be surprised if any group of experienced business men could offer an unequivocal solution with unanimous accord to any one of them." (pp. xix-xx.)

The first problem is typical of one method of presenting the cases. (pp. 3-7.) Mr. Main has \$100,000. About 50 per cent is invested in real estate second mortgages. His method of selection and certain principles of mortgage investment are then tersely stated. He has 25 per cent in bonds. The balance of his capital is in common stocks. He became especially interested in this form of investment after reading certain books on the relative merits of common stocks as opposed to bonds. The argument is briefly summarized. Then comes the question for discussion: Should Mr. Main have decided to place a larger proportion of his funds in common stocks? There are general references on securities to Dewing, *Financial Policy of Corporations* (Book I); Gerstenberg, *Financial Organization* (ch. 8, 10-17); and Lincoln, *Applied Business Finance* (ch. 5-6). On real estate mortgages reference is made to Bonneville, *Elements of Business Finance* (ch. 9); Gerstenberg, *op. cit.* (ch. 11); Kirshman, *Principles of Investment* (ch. 21); Lagerquist, *Investment Analysis* (ch. 28). Federal farm loan bonds have further reference in Jordan, *Investments* (ch. 4). For the merits of common stocks the student is referred to Van Strum, *Investing in Purchasing Power*, and Smith, *Common Stocks as Long Term Investments*.

It may be noted that these references, except for the last two, are all to books designed primarily for use as texts. There is clearly a reference back to the generalized statement of principles. As the argument is stated in the problem such reference is essential. The statement of the argument often assumes the form of a statement of principle: "He was not interested in preferred stocks and debenture bonds, since they allowed only a fixed return and had little possibility of appreciation, even if the companies prospered. In case of failure, on the other hand, they sometimes fared little better than common stocks." True as that summary may be, it is surely too brief for a student's introduction to and disposition of preferred stocks.

The other extreme of presentation is reached in Case 13. (pp. 64-69.) Without any outside reference and without any experience in previous cases that sheds much light on the question the student it asked, at what price should the investment firm of Mumford and Company have offered 25,000 shares of no-par common stock of the Kenworth Corporation? The case sets forth the financial history of the corporation in good detail. The condition of the market is presented: volumes of financing, average stock prices, yields

of other similar securities. It seems evident from the nature of the problem and the material presented that the question asked is immaterial. The real question is, what is the importance of each of these considerations that have been mentioned? In the hands of a competent teacher this discussion would be highly enlightening. With an average group of students and an instructor who took the question asked at its face value, the hour of discussion would be neither conclusive nor instructive in the art of thinking.

There are 162 problems. They are presented in twelve fields: investors, investment houses, banking institutions, specialized financing, promotion and organization, permanent capital, bank loans, commercial paper, management of earnings, administrative policies, valuation and reorganization, analysis of securities. There is almost no repetition and the entire problem suggested by the heading is broadly touched on. In the analysis of securities one problem each deals with various forms of stocks; there are two problems on investment trusts and foreign investments; bonds are treated in three problems and investment policy in another.

The book is both suggestive and provocative. The method as outlined in the introduction departs more from orthodox teaching than is suggested in the cases themselves. The essential difference seems to your reviewer to lie in the sequence of study. Should the student go from a concrete problem to general references that may shed some light or should he take the orderly arrangement of generalizations and go to illustrations and occasional problems? The danger in the latter method is that the problem merely illustrates what seems to become hard and fast law. Faced first with the problem, the student may learn better the difficulty of making a definite decision in terms of the generalized presentation. The nature and uses of the average yield on a common stock are seen in a very different light if the question is asked, at what price shall we offer this stock?, rather than if in a paragraph of straightforward text it is noted that stocks of a certain sort yielded on the average 7 per cent. The latter summary tends to become not only a generalization but particularization as well. But whichever method of teaching is used one requires both cases and general treatises on the reference shelf. Designed to be the source from which reference is made to texts, *Problems in Finance* is still well adapted to the needs of the teacher who uses the problem for discussion of the general principles presented in the primary text.

A. F. HENRICHs

Brown University

Accounting Reports in Business Management, by HOMER E. GREGORY. The Ronald Press Company, New York, 1928. xi, 445 pp.

This book consists of 391 pages of text, 30 pages of problems, 6 pages of bibliography, and an index of 13 pages. Of the 22 chapters numbers 3 to 11 inclusive deal with balance sheets, their construction and interpretation. The following three chapters also treat items that appear upon the balance sheets, but they involve additional material from other sources. Chapters 15 and 16 explain how operations can be controlled through the Profit and Loss Statements. The following three chapters show how efficiency reports may

lead to control over specific operating conditions—the balance sheets and operating statements treating only of generalities. Finally we have three chapters showing how standard costs and the budget may be used as instruments of control.

Although it cannot be said that most of the information in this volume is new, nevertheless this fact does not necessarily detract from its value. Professor Gregory, in spite of an occasional unduly long sentence, expresses his thoughts clearly and he gives evidence of being a straight thinker. The book gives one the impression that it was written by a practical, experienced person, well versed in the literature and practices of which he writes.

Occasionally there appears to be a little unnecessary repetition throughout the book, but by and large it is an orderly presentation of material which any executive might well know. The reviewer feels that it will serve as a satisfactory text, because there appears to be plenty of meat in it for class discussion. Finally Professor Gregory has performed a distinct service to the accounting profession in that he demonstrates that accountants are not mere bookkeepers, but that, properly trained, they may be business advisers of the most serviceable sort, whether practicing publicly or being employed in private concerns, for their talents are by no means limited to mere record-keeping but are as broad as the ramifications of the field of business itself.

ARTHUR W. HANSON

*Harvard Graduate School
of Business Administration.*

ERRATUM

Beginning with the fifth line from the bottom of page 227 of the June issue the review should read: "In the base year by definition the price of each of two commodities is 100. In the next year A is 125 and B is 75. The index of general prices is still 100; the index of dispersion will show the parting."

UNIVERSITY NOTES

UNIVERSITY OF ARKANSAS

Enrollment in both elementary and advanced accounting classes has shown more than a 50% increase this year. Courses in C. P. A. Problems and Accounting Systems have been added to the curriculum.

Several public accounting firms have indicated their willingness to employ students during the month of January. Alpha Kappa Psi has installed a chapter in the School of Business Administration. Twenty-two charter members have been initiated.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES

Mr. Arthur Lorig has left the department to become Secretary and Treasurer of the Cypress Petroleum Co. Mr. Nathan Silverstein has been appointed associate in economics and accounting.

Professor Ira N. Frisbee is preparing a text on statistics with Professor Riggleman and Burtchett, which will be published by McGraw-Hill in 1929. Mr. H. S. Noble, chairman of the department, has returned from a half-year leave spent in Europe.

UNIVERSITY OF CHICAGO

Mr. J. H. Cover, director of the bureau of business research at the University of Pittsburgh, has been appointed professorial lecturer in economics for one year to conduct research in the consumption of meat and meat products. Professor William J. Lindsay from the University of Utah is acting as research assistant to Professor McKinsey in business organization and policies.

The University of Chicago Law School has added a special course in accounting to the regular law curriculum; it may be applied toward requirements for the J.D. or the LL.B degree. Professor Daines is developing material for a new course in Managerial Uses of Accounting and Statistics. Mr. W. J. Graham is reorganizing the course in accounting required of all students in the School of Commerce and Administration.

Mr. Daines recently addressed the annual meeting of the National Association of Funeral Directors at Kansas City on the subject of "Budgetary Control for Funeral Directors."

UNIVERSITY OF COLORADO

Professor Frederick A. Bushee, head of the department of Economics and acting dean of the School of Business Administration, is spending a sabbatical year in Europe. During his absence Mr. J. G. Johnson will act as head of the department and Mr. E. I. Fjeld, associate professor of accounting, as dean of the school.

Dr. Kenneth Field of the University of Illinois has been appointed instructor in business and economics. Mr. G. Arnold Logan has been made part-time instructor in accounting.

UNIVERSITY OF KANSAS

Professor Jens P. Jensen has been put in charge of the bureau of business research.

Mr. Leslie T. Tupy received his C. P. A. as a result of the May examinations.

UNIVERSITY OF KENTUCKY

Dr. W. E. Dickerson and Dr. S. E. Leland have left the department this year. New members of the staff are Mr. James W. Martin, Mr. Robert D. Haun, John P. Troxell, Colvin P. Rouse.

LOUISIANA STATE UNIVERSITY

A new College of Commerce has been organized this year with the following faculty:

Mr. James B. Trant, dean and professor of banking, formerly head of the department of Banking and Finance at the University of Texas.

W. Mackenzie Stevens, professor of marketing and statistics, formerly professor of marketing at the University of Maryland and specialist in marketing, U. S. Department of Agriculture.

T. N. Farris, professor of economics; Justine Mendelsohn, professor of accounting; I. C. Nichols, professor of mathematics of investment; Richard J. Russell, associate professor of economic geography; Joseph G. Mayton, assistant professor of transportation and foreign trade; Emory K. Johnston, assistant professor of advertising; John E. Uhler, associate professor of business English; Roy L. Thompson, assistant professor of agricultural economics; Wyatt A. Pickens, assistant professor of Commercial Spanish.

UNIVERSITY OF MICHIGAN

Mr. R. W. Coleman, instructor in accounting 1927-28, is now teaching at the College of the City of Detroit.

Mr. G. R. Husband of the College of the City of Detroit has taken Mr. Coleman's place in this department.

STATE UNIVERSITY OF MONTANA

Assistant Professor Calvin Crumbaker is on leave of absence for the year, which he is spending as teaching fellow at the University of Wisconsin. Miss Virginia Dixon and Mr. C. Howd have left the department. Their places have been filled by Mr. Wallin, from the University of Wisconsin; Mr. Kast, from the University of Kansas, and Mr. John Hahn.

Professor Sanford has prepared a text for use in the elementary class in accounting, which is being used in mimeographed form this year. The course is being conducted for the first time with the use of two two-hour laboratory periods per week.

Mr. Sanford has been re-appointed chairman of the university committee for the granting of certificates to successful candidates in the examinations.

UNIVERSITY OF NEBRASKA

Mr. J. Merle Yowell has been appointed instructor in accounting. Mr. Yowell comes from the University of Kansas.

NEW YORK UNIVERSITY

Dr. Edward Gasparitsch has been raised to the rank of assistant professor. Mr. Lang of this department is joint author with Mr. Amidon of "Essentials of Cost Accounting," Ronald Press Co., 1928.

UNIVERSITY OF NORTH DAKOTA

A course in Accounting Systems has been required of all seniors majoring in accounting.

The local chapter of Beta Alpha Psi is arranging to have business men discuss before the meetings the problems of their particular specialties.

OHIO UNIVERSITY (ATHENS)

Mr. Robert Bishop, C. P. A. has resigned from the staff. Mr. R. N. Frickey, C. P. A. is giving the courses in Cost Accounting and C. P. A. Problems and Practice.

With this year the requirements in the School of Commerce have been changed to require one year of accounting of all students in the school, and one year each of business law and marketing.

OREGON STATE AGRICULTURAL COLLEGE

Mr. Jud Payne, instructor in accounting, has left the department and Mr. M. T. Smartt has taken his place.

Professor Vance and Bosworth have conducted a number of county business institutes which have been very successful. These institutes will be much extended next year.

Mr. Bosworth has prepared in conjunction with the extension division a bulletin on "Operating Costs in Retail Merchandising in Oregon." Mr. Bosworth has been elected one of the directors of the Oregon Society of Certified Public Accountants.

UNIVERSITY OF MINNESOTA

Mr. Arthur E. Boer, M. A. Michigan, has joined the staff as instructor in accounting. Mr. Boer for the past four years has been instructing in commercial subjects at the high schools of Cadillac and Wyandotte, Michigan.

Mr. H. J. Ostlund, assistant professor of accounting, will be on leave of absence for the balance of the academic year to carry on research into drug-store costs with the National Drug Association at New York City.

Of the six seniors initiated into Beta Gamma Sigma this fall five were accounting majors.

A LETTER FROM THE SECRETARY

November 19, 1928.

To the Members:

The Secretary's office needs your help in connection with:

- (1) Back copies of "The Accounting Review," and
- (2) Missing addresses of Association members.

Our supply of certain back issues of "The Accounting Review" has been completely exhausted. The issues of March, June and September, 1928, have all been in unexpectedly strong demand and we are still receiving orders. We can use 25 copies of each of these issues and will be glad to pay any member 50c per copy, plus postage, on any copies which he has at hand but doesn't intend to keep for permanent file. Please send these in now. Or, if that isn't convenient, bring them with you to the Convention and turn them over to the Secretary at that time.

We should like to have, to complete our files, ten copies each of the old Association proceedings, numbers 2, 4 and 6 (issued in 1918, 1920, and 1922). One dollar each will be paid for any such copies sent to the Secretary's office.

A number of members of the Association have moved without leaving an address and we are, therefore, unable to reach them either with Association announcements or copies of "The Accounting Review." These members are listed at the end of the membership list appearing in this issue. If you can tell us where any of these people are now located we shall appreciate it, although unable to offer any financial inducement for the information.

Your assistance in the above matters will be very helpful.

Yours very truly,

HOWARD C. GREER,
Secretary-Treasurer.

Thirteenth Annual Meeting

AMERICAN ASSOCIATION OF UNIVERSITY INSTRUCTORS IN ACCOUNTING

Hotel Stevens, Chicago

December 27-28, 1928

PROGRAM

MORNING SESSION—DECEMBER 27

(Meeting Called to Order, 10:00 A. M.)

TOPIC: *Accountancy in European Countries.*

"Cost Accounting, Its Present Status in Great Britain."

Howard S. Noble, University of California at Los Angeles.

"Some Observations on Accounting in France and Germany."

H. H. Baily, University of Illinois.

"Present-Day Basis for Accounting in Italy."

George E. Frazer, Frazer & Torbet.

AFTERNOON SESSION—DECEMBER 27

(Meeting Called to Order, 2:00 P. M.)

TOPIC: *Theory and Practice.*

"Some Divergencies of Accounting Theory from Economic Theory."

John B. Canning, Stanford University.

"Realized Income."

E. A. Heilman, University of Minnesota.

"The Changing Objectives of Accounting."

H. C. Daines, University of Chicago.

"Financial and Industrial Investigations."

Arthur Andersen, Arthur Andersen & Co.

"Appreciation in Its Various Aspects."

John R. Wildman, Haskins & Sells.

ANNUAL BANQUET—DECEMBER 27, 7 P. M.

Presidential address, reports of officers and committees, and general discussion of association activities.

MORNING SESSION—DECEMBER 28

(Meeting Called to Order, 10:00 A. M.)

*Joint Session with American Association of Collegiate Schools
of Business.*

TOPIC: *"To What Extent Shall Accounting Instructors Indulge in Outside Practice?"*

Paper: James O. McKinsey, The University of Chicago.

Paper: Charles L. Raper, Syracuse University.

Discussion: W. R. Gray, Dartmouth College.

AFTERNOON SESSION—DECEMBER 28

(Meeting Called to Order, 2:00 P. M.)

TOPIC: *Policy and Administration.*

"Business Policy as Related to Accounting."
Chester F. Lay, University of Texas.

"Methods and Advantages of Early Closing."
J. B. Heckert, Ohio State University.

"The Administrative Uses of Differential Costs."
T. H. Sanders, Harvard University.

ELECTION OF OFFICERS, UNFINISHED BUSINESS, ETC.

MEMBERSHIP LIST

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CONSTITUTION

ARTICLE I

The name of this organization shall be The American Association of UNIVERSITY INSTRUCTORS IN ACCOUNTING: short title "UNIVERSITY INSTRUCTORS IN ACCOUNTING."

ARTICLE II

The objects of the Association shall be as follows:

- a) To further the advancement of education in accounting, particularly the development and refinement of the theory of accounting, content of accounting courses, and methods of instruction.
- b) To encourage practical research in accounting, especially theory and methods, the interpretation of accounting data, and the use of accounting statistics in related fields.
- c) To develop media for the discussion of accounting subjects.
- d) To promote more intimate and cordial relations among instructors and others who are interested in the development of accounting.

ARTICLE III

There shall be two classes of members, active and associate. Active membership shall be limited to those engaged in giving instruction in accounting in educational institutions of collegiate rank. Other persons interested in instruction in accounting may become associate members. Any active member who permanently discontinues his teaching work as aforesaid thereby shall become an associate member. Any associate member who undertakes teaching work as aforesaid shall thereby become an active member.

Nominations for membership may be made to the Secretary-Treasurer by any member. Election to membership shall be accomplished in such manner as the Executive Committee shall direct.

ARTICLE IV

The annual membership dues for both classes of members shall be \$3.00, unless and until the Association undertakes the publication of any periodical beyond the proceedings, when the dues shall automatically become \$5.00 from the beginning of the year in which such publication is undertaken. Annual dues shall become payable at the beginning of each calendar year.

Any member who becomes two years in arrears, and who does not remit within thirty days after formal notification of the provisions of this article, shall be dropped from the roll by the Secretary-Treasurer, and may thereafter be reinstated only by action of the Executive Committee and payment of arrears in full.

ARTICLE V

There shall be an annual meeting of the Association at such time and place as the Executive Committee shall direct. There shall be such meetings of the Executive Committee as may be called by the President.

ARTICLE VI

The administration of the affairs of the Association as provided by the constitution and subsequent legislation shall be vested in an Executive Committee of the officers, who shall be a president, three vice-presidents, and a secretary-treasurer, to be elected annually. The vice-presidents first elected shall hold office for terms of one, two and three years, respectively. Vice-presidents thereafter elected shall hold office for three years. The above provision for officers shall be deemed to cover the requirements in the certificate of incorporation as to trustees.

ARTICLE VII

Voting power in the Association and eligibility for office shall be restricted to the active members.

ARTICLE VIII

There shall be standing committees on constitution and by-laws, publications, and membership, and such other standing committees as shall be determined by the Executive Committee. Members of the first committee on constitution and by-laws shall be appointed for terms of one, two, and three years, respectively. Subsequent appointments shall be for a period of three years. All committee members shall be appointed by the president. The president shall be an *ex-officio* member of all committees.

ARTICLE IX

This constitution may be amended by a two-thirds vote of the members present and voting at any annual meeting, subsequent to confirmation by a majority of those voting through a referendum mail vote. Proposed amendments must be submitted by or through the Committee on Constitution and By-laws and a written statement of any proposed amendment shall be mailed by the Secretary-Treasurer to each member at least thirty days prior to the date of the annual meeting.

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